

Public Health - Seattle & King County



**Division of  
Emergency  
Medical Services**

**2013 Annual Report**  
to the King County Council  
September 2013



Medic One/Emergency Medical Services (EMS) serves nearly 2 million people in King County and provides life saving services on average **every 3 minutes**.

Each year, approximately **1 out of 10** of our residents will use our Medic One/EMS system.

Every year **the Medic One/EMS System saves thousands of lives:**

In 2012 firefighters responded to more than 172,000 calls in King County.

In 2012, paramedics responded to more than 48,000 calls for advanced life support in King County.

Compared to other cities, cardiac arrest victims are 4 to 5 times more likely to survive.

In 2012, Seattle & King County achieved a **57% survival rate** for cardiac arrest.

**This is the highest reported survival rate anywhere.**

***Strong, effective medicine is the hallmark  
of the regional Medic One system.***

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# INTRODUCTION

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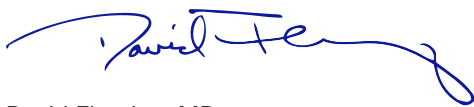
We are pleased to present the Emergency Medical Services (EMS) Division 2013 Annual Report to the King County Council, per King County Ordinance #12849.

This is the 15th year of reporting on the wide range of services and programs that our world renowned system so successfully provides. It marks the sixth and final year of the current Medic One/EMS Strategic Plan and levy, providing context for reviewing how the system has performed over the levy span. It signifies a year of collaboration, with the region endorsing the newly devised 2014-2019 Strategic Plan and thus the direction that the regional EMS system will take in the future. It also indicates a year of transition and tremendous opportunity, as the Division and its partners prepare to move programs and services forward to meet upcoming system needs throughout the next levy span.

The 2013 Annual Report highlights what has worked well, and what must continue. Section by section, you will see from the program descriptions and associated results just how the EMS Division and its partners have performed. In 2014 and beyond, we will build upon this performance baseline as more effective strategies to serve our community, including the most vulnerable among us, are created.

Reporting our accomplishments in context of the 2008-2013 Strategic Plan provides the opportunity to evaluate our success. This can be no better measured than in cardiac arrest survival. Over the past six years, cardiac arrest survival has increased from 45% to 57%. Thus, we can see that our regional and tiered system of emergency care, consistently driven by medical outcomes, continues to demonstrate its superior effectiveness.

Thank you for your continued support of the EMS system's commitment to excellence. It's the collective efforts of all our providers that make it possible for this regional system to achieve such impressive, sustained and recognized accomplishments.



David Fleming, MD  
Director & Health Officer  
Public Health - Seattle & King County



Jim Fogarty  
Division Director  
Emergency Medical Services



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## Commonly Used Acronyms

EMS - Emergency Medical Services  
ALS - Advanced Life Support  
BLS - Basic Life Support  
EMD - Emergency Medical Dispatch  
EMT - Emergency Medical Technician

## ACKNOWLEDGEMENTS

The Emergency Medical Services (EMS) Division would like to thank all of the individuals who contributed to the EMS 2013 Annual Report, including managers of the various EMS projects and programs included in the report, **Leonard Roberts** and the **Seattle Fire Department**, and the EMS Division data analysis team of **Carol Fahrenbruch, Dan Henwood, Dmitry Sharkov** and **Ben Stubbs**.

The EMS Division would also like to thank **Dr. Leonard Cobb** and **Dr. Michael Copass** of the Seattle Medic One program for their collaborative efforts in partnering with the EMS Division.

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## EXECUTIVE SUMMARY

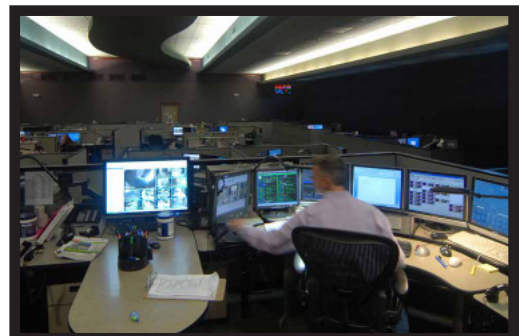
This year marks the sixth and final year of the current Medic One/EMS Strategic Plan and levy. As such, the 2013 annual report provides the ideal opportunity to review the achievements made over the past year as well as reflect on what the system has accomplished over the 2008-2013 levy span.

A dominant theme these past six years is how best to fine-tune an already excellent system. We are finding ways to serve more people, using fewer resources.

Nothing symbolizes this success better than King County's cardiac arrest survival rates – which increased over just the past six years from 45% to an astounding 57% – the highest reported in the nation, if not the world. That increase stems from small but revolutionary changes, including better defibrillator protocols, quicker performance feedback, and an important update to how CPR is performed. The recommendations emerged from a rigorous focus on continual quality improvement, under the system's mantra of "measure and improve." These efforts are led by the Regional Medical Quality Improvement (QI) section, which was created at the beginning of the current levy. Committed to performing consistent, scientific and case-based evaluations, the QI team has grown into a powerful clinical tool for the region.

As a result of efforts to fine-tune:

- New measures for stroke and ST Elevated Myocardial Infarction (STEMI) treatment were developed, and training for EMS personnel was adjusted to incorporate these new practices.
- Alternatives to dispatching "lights and sirens" for lower acuity patients demonstrated cost-effective yet still high quality and appropriate responses to specific users of the EMS system.
- Interventions to eliminate or reduce falls in older adults resulted in fewer unintentional injuries, lessening system demand and leading to cost savings and greater system effectiveness.
- A new electronic records system (the SEND project) is providing access to patient records three times faster than in the past, with fewer errors, and hospitals that adopt the new interface are getting patient information more quickly.
- The EMS Division authored over 70 publications in a variety of medical journals, drawing national media attention to the EMS system in King County for its CPR and AED programs.
- The Resuscitation Academy fostered collaboration among other EMS jurisdictions, across the region and worldwide, to improve EMS services.
- Partnerships throughout all pieces of the EMS system were strengthened, and the region collectively agreed on a direction for the Medic One/EMS program in the future.



Overall, the EMS system executed on the initiatives identified in the Medic One/EMS 2008-2013 Strategic Plan, which led to better service and contained costs.

New to the EMS Division was the requirement by the King County Auditor to conduct an annual review. The EMS Division embraced this requirement, and it became a powerful tool for measuring system effectiveness. Four out of four audits reiterated that EMS levy funds are administered in a responsible manner to meet system goals, demonstrating the Division's commitment to financial accountability in managing EMS levy funds. Audit recommendations led the EMS Division to develop more comprehensive performance measures and milestones. This enhanced focus on better identifying and communicating goals and outcomes played an integral role in stakeholders deciding to convert pilot projects into ongoing programs for the 2014-2019 levy span. The stakeholders also agreed to expand the scope of measurement across a wider set of patients, by creating a set of regional performance measures. These measures are currently being refined and will be an integral part of upcoming editions of the annual report.

Finally, process improvements over the past six years led to accomplishing more with existing resources. Economic conditions changed significantly from the forecasts developed for the 2008-2013 levy span. For the first time in the history of the levy, actual funds raised by property taxes decreased over the six year levy. Although the EMS levy was somewhat cushioned from the full extent of the downturn due to assessed values being higher than planned at the beginning of the levy period, the EMS Division and its partners committed to minimizing new costs and looking for efficiencies. Successful strategies included sharing resources with other entities, enacting work process changes within sections of the EMS Division, and 'rightsizing' budgets, allowing funds to be reprogrammed into higher priority projects.

The EMS Division managed its programs so efficiently that it was able to carry forward significant savings into the 2014-2019 levy cycle while maintaining excellence in the quality of EMS services, a feat that was lauded by the King County Auditor's office in its 2012 review. The newly devised 2014-2019 Strategic Plan maintains a dogged focus on system efficiencies by adding no new units over the span of the next levy, extending the lifespan of equipment, and designing new strategies to target repeat callers and reduce the inappropriate use of EMS services.

Rigorous and detailed assessment of patient care paired with a focus on efficient and effective use of public funds results in a program that is second to none. The Medic One/EMS 2013 Annual Report provides clear evidence of how this is put into practice every day in King County.



# SYSTEM OVERVIEW

Any time you call 9-1-1 for a medical emergency, you are using the Medic One/EMS system. This internationally renowned regional system provides service to the residents of Seattle and King County, responding to an area of 2,134 square miles and serving a population of over 1.9 million. The system is managed by the King County Emergency Medical Services (EMS) Division and relies on complex partnerships with fire departments, paramedic agencies, EMS dispatch centers, and hospitals to make the program seamless and successful.

The Medic One/EMS System in King County is distinctive from other systems in that it is (a) medically based, (b) regional, and (c) uses tiered out-of-hospital response.

(a) The **medical model** is the core of the EMS program in King County. In essence, it asserts that direction and practice must be derived from the highest standards of medical training and medical care. Accordingly, the EMS Division strives for emergency medical care that is founded on the highest standards of training, best medical practice, scientific evidence, and close supervision by physicians experienced in EMS.

The leadership of the Medical Program Director ensures the success and the ongoing medical quality improvement of the EMS system. Mickey Eisenberg, MD, PhD, has filled this role for the past ten years. His substantial responsibilities include writing and approving medical protocols, approving all initial Emergency Medical Technician (EMT) and continuing EMT medical education, undertaking new and ongoing medical quality improvement activities, and initiating disciplinary actions when necessary.

To support the best possible outcomes of care, Dr. Eisenberg oversees continual medical quality improvement activities, such as the review of every cardiac arrest event for the past 35+ years and patient protocol compliance audits. The result of this ongoing quality improvement is enhanced patient outcomes and a steadily rising cardiac arrest survival rate, currently the highest in the nation.



Paramedics consult with Medical Control doctors from the field.

(b) **Regional partners** sustain uniformity and consistency across the entire EMS system. Dr. Eisenberg coordinates policies and procedures among the Medical Directors of the region's six paramedic programs: Dr. Michael Copass of Seattle; Dr. Jim Boehl of Bellevue; Dr. Adrian Whorton of Redmond; Dr. Gary Somers of Shoreline; Dr. Tom Rea for south King County; and Dr. Sam Warren of Vashon. Quarterly meetings are held to discuss and take action on paramedic-related matters. Dr. Eisenberg also works closely with the Central Region Trauma Council and the EMS Advisory Committee which provides key counsel to the EMS Division on regional Medic One/EMS policies and practices in King County, including major governance issues, strategic plan implementation, and other proposals.

(c) A **tiered response system** in King County ensures the most appropriate care provider responds to each 9-1-1 call.

There are five major components in the tiered regional Medic One/EMS system:

Universal Access: A patient or bystander accesses the Medic One/EMS system by calling 9-1-1 for medical assistance. Bystanders' reactions and rapid responses to the scene can greatly impact the chances of patient survival.

Dispatcher Triage: Calls to 9-1-1 are received and triaged by professional dispatchers who determine the most appropriate level of care needed. Dispatchers are trained to provide pre-arrival instructions for most medical emergencies and guide the caller through life-saving steps, including Cardiopulmonary Resuscitation (CPR) and Automated External Defibrillator (AED) instructions, until the Medic One/EMS provider arrives.

Basic Life Support (BLS) Services: BLS personnel are the "first responders" to an incident, providing immediate basic life support medical care, using advanced first aid and CPR/AED to stabilize the patient. Staffed by firefighters trained as Emergency Medical Technicians (EMTs), BLS units arrive at the scene in under five minutes (on average). BLS contributes significantly to the success of the Medic One/EMS system.

Advanced Life Support (ALS) Services: Paramedics provide out-of-hospital emergency medical care for critical or life-threatening injuries and illness. Paramedics respond on average to about 30% of all Medic One/EMS calls.

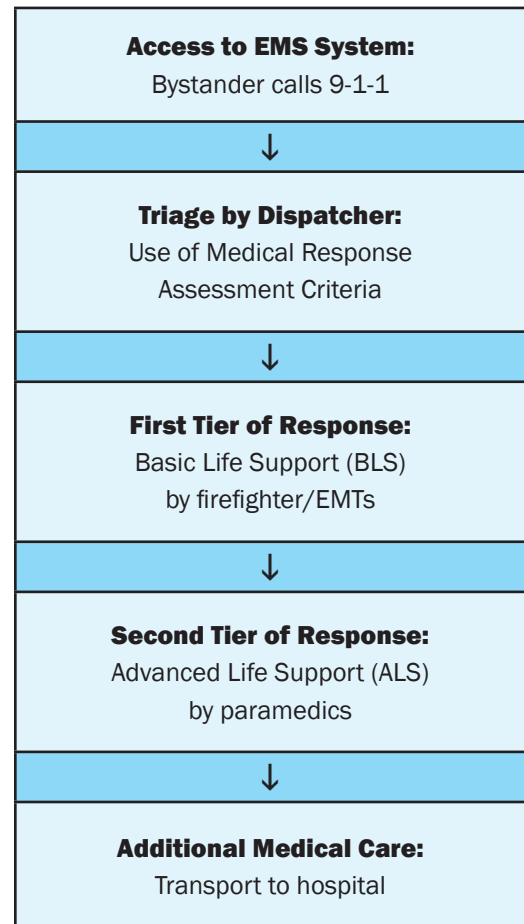
Transport to Hospitals: Once a patient is stabilized, it is determined whether transport to a hospital or clinic for further medical attention is needed. Transport is most often provided by an ALS agency, BLS agency, or private ambulance.

The Medic One/EMS system operates in a coordinated partnership among numerous stakeholders across King County to provide high quality pre-hospital medical care.

**Dispatch** 9-1-1 calls are received by one of five dispatch centers in Seattle and throughout King County. Following medically approved emergency dispatch triage guidelines, dispatchers determine the level of care needed.

**Basic Life Support (BLS)** or rapid, first-on-scene medical care, is provided by over 4,000 Emergency Medical Technicians (EMTs) employed by 30 fire-based agencies throughout King County. EMTs receive more than 140 hours of basic training and hospital experience with additional training in cardiac defibrillation (electrical shocks) given to restore a

#### EMS Tiered Response System



## SYSTEM OVERVIEW, continued

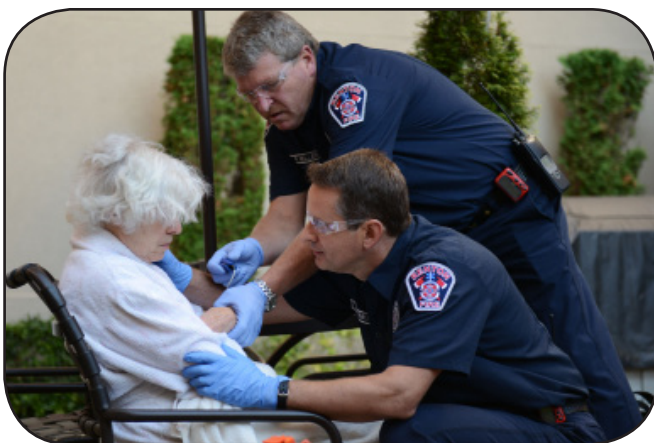
heart rhythm. EMTs are certified by the State of Washington and are required to complete ongoing continuing education to maintain certification.

**Advanced Life Support (ALS)** services, or regional paramedic services, are provided by six agencies operating 26 ALS units throughout King County: Bellevue Fire Department (4 units), Redmond Fire Department (3 units), Seattle Fire Department (7 units), Shoreline Fire Department (3 units), King County Medic One (8 units) and Vashon Island Fire & Rescue (1 unit). In addition, a contract with Snohomish County Fire District 26 brings ALS services to the Skykomish/King County Fire District 50 area, from Baring to Stevens Pass. Paramedics arrive second on the scene and provide out-of-hospital emergency care for serious or life-threatening injuries and illness. Examples of out-of-hospital procedures include airway control, heart pacing, and dispensing of medicine. Paramedics receive over 2,500 hours of intensive training through the University of Washington/Harborview Medical Center Paramedic Training Program and are required to complete continuing medical education to maintain certification.

The EMS Division manages the core Regional Services that support the key elements of the system. They are essential to providing the highest quality out-of-hospital emergency care available. Regional coordination ensures pre-hospital patient care is delivered at the same standards across the region, regional policies and practices reflect the diversity of needs, and local area service delivery is balanced with centralized interests. Examples include:

- Uniform training of EMTs and dispatchers
- Regional medical control and quality improvement
- Injury prevention programs
- Regional data collection and analysis
- Regional planning for the EMS system
- Financial/administrative management

The EMS Division also manages innovative projects and operations called Strategic Initiatives designed to improve the quality of Medic One/EMS services and manage the growth and costs of the system. Regional Strategic Initiatives have allowed the Medic One/EMS program in King County to maintain its role as a national leader in the field and have been key in the system's ability to manage its costs.



## EMS DIVISION PROGRAMS OVERVIEW



The Emergency Medical Services (EMS) Division of Public Health - Seattle & King County is dedicated to increasing survival and reducing disability from out-of-hospital emergencies in the county by providing the highest quality patient care in the pre-hospital setting. To accomplish this, the Division adheres to a medical model of integrated regional Medic One/EMS services, a philosophy of cooperative decision making, and the development of innovative strategic initiatives that address the demand for services and encourage system efficiencies. All EMS Division programs are designed to enhance these efforts and are developed through strong partnerships with other regional EMS agencies and innovative leadership in the emergency medical field.

Directing the EMS Division in managing the regional system is the Medic One/EMS 2008-2013 Strategic Plan, approved by the King County Council in April 2007 and voters in November 2007. Built upon the system's successful medical model and regional approach, the Plan establishes policy directions, outlines the development of new or enhanced programs and initiatives, and presents a financial plan to support the Medic One/EMS system through the span of the levy period. With the expected expiration of the 2008-2013 EMS levy, the region undertook a review of the EMS system to produce a strategic plan that would provide direction for the next levy period (see SI: Strategic Planning for the Next Levy Period on p. 58 for details).

The EMS Division plays a significant role in developing, administering and evaluating critical EMS system activities. It provides the core support functions that emphasize the uniformity and standardization of direct services provided by the system's partners. These programs help tie the regional medical model together by providing consistent regional medical direction, standardized EMT training and continuing medical education, standard EMS training for emergency dispatchers, centralized data collection, paramedic service planning and analysis, along with financial management of the regional EMS levy fund. It is far more medically effective and cost efficient for the EMS Division to manage these functions than to have each local response agency develop, implement and administer its own such programs.

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## EMS DIVISION PROGRAMS OVERVIEW, continued

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This section summarizes the EMS Division's primary programs and activities, including King County Medic One.

It is well known that the regional system depends on a complex partnership of providers, all of whom recognize the strong value for residents in maintaining the tiered response system. The EMS Division acknowledges the extraordinary efforts of all the EMS partners involved in implementing established programs and developing new programs. The time, expertise and collaborative efforts required of the EMS community demonstrate exactly why the EMS system in King County is so successful and serves as an international role model.

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### EMS DIVISION REGIONAL PROGRAMS

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#### LOOKING AHEAD

The current Strategic Plan and EMS levy expire on December 31, 2013. The updated Strategic Plan for the 2014-2019 levy span, developed collaboratively by regional leaders and EMS Stakeholders builds on key services from the current levy to maintain service levels, incorporates efficiencies, and offers improvements where appropriate. This new Strategic Plan will be the focus of upcoming annual reports.

# MEDICAL QUALITY IMPROVEMENT

**OVERVIEW:** The Medical Quality Improvement (QI) section conducts programmatic, scientific, and case-based evaluation of the EMS system to improve the quality of EMS patient care in King County. To advance the science of resuscitation and EMS care, it partners with investigators in the EMS Division and at the University of Washington on research projects. This allows for productive and unique collaboration across the academic and operational EMS community, the results of which improve care, outcomes, and subsequently, the health of King County residents.

Throughout the 2008-2013 levy period, the Medical QI section has undertaken a broad range of activities to develop and expand critical evaluations of pre-hospital care. The following section provides a brief background of the Medical QI section and details core QI programmatic activities and research collaborations.

## PROGRAM INDEX

1. Cardiac Arrest Quality Assurance
2. Dispatcher Assisted Resuscitation Trial (DART) Study
3. Comprehensive Heart Attack Surveillance and Evaluation (CHASE)
4. Airway Quality Assurance Report/Safety of Central Venous Lines
5. Supporting Public Health with Emergency Responders (SPHERE)
6. Resuscitation Academy
7. EMT Advisory Council
8. Limited English Proficiency (LEP) Callers Study
9. Socioeconomic Status Study
10. Long Term Outcome of Pediatric Cardiac Arrest
11. Cardiac Arrest in Exercise Facilities
12. Antiarrhythmics Used in Cardiac Arrest
13. Police Defibrillation
14. EMS Quality Improvement Audits - [Highlight p. 16](#)
15. Stroke Surveillance

### 1. Cardiac Arrest Quality Assurance

Out-of-hospital cardiac arrest, or sudden cardiac arrest, is a leading cause of death in the United States. It strikes upwards of 1,000 people each year in King County alone. Since 1976, the EMS Division has tracked every out-of-hospital cardiac arrest that occurs in the region. Dispatch, BLS, ALS, defibrillator and hospital records are reviewed for each case to ensure that the most appropriate, timely and quality care is provided to each person who suffers a cardiac arrest (see EMS 2011 Annual Report for program details).

### 2. Dispatcher Assisted Resuscitation Trial (DART) Study

Completed in 2010, the DART study examined cardiac arrest outcomes when providing dispatch assisted



### 2008-2013 ACCOMPLISHMENT

With the medical model as its core, the EMS System of King County relies heavily on the Medical Quality Improvement section (developed in this levy period) to undertake a wide range of activities to critically evaluate pre-hospital care.

cardiopulmonary resuscitation (CPR). The study indicated that administering CPR with just compressions, as opposed to CPR with compressions and rescue breathing, was just as beneficial and had nearly the same survival rate (see EMS 2010 Annual Report for details).

### 3. Comprehensive Heart Attack Surveillance and Evaluation (CHASE)

ST segment elevation myocardial infarction (STEMI) occurs when blood flow to the heart is blocked by a blood clot in a coronary artery. It is regarded as a

## MEDICAL QUALITY IMPROVEMENT, continued

### 2008-2013 ACCOMPLISHMENT

Results from the DART study shed new light on CPR, showing that chest compression CPR is just as effective as traditional mouth-to-mouth resuscitation with survival rates nearly the same. Making CPR simpler may enable more people to perform the life-saving technique, and possibly lead to increased survival rates. The New England Journal of Medicine published the DART study. CPR methods were discussed on the July 29, 2010 airing of NPR's "Morning Edition."



cardiovascular emergency, and the patient's outcome can be significantly improved through rapid hospital intervention (the American Heart Association has a goal of 90 minutes from EMS contact to surgical opening of the arteries). CHASE identifies ways that both EMS and hospitals can improve the identification, triage and management of these patients (see EMS 2011 Annual Report for details).

#### **4. Airway Quality Assurance Report/Safety of Central Venous Lines**

This quality assurance activity demonstrated that King County paramedics achieve exceptional proficiency (over 99% success) in endotracheal intubation, a level that has become the standard for EMS systems worldwide (see EMS 2011 Annual Report for details).

#### **5. Supporting Public Health with Emergency Responders (SPHERE)**

In 2010, a SPHERE pilot project explored the feasibility of having EMTs provide on-scene counseling to elderly residents who fell (see EMS 2011 Annual Report for details).

#### **6. Resuscitation Academy**

The EMS Division and Seattle Medic One, in collaboration with the Medic One Foundation, developed the Resuscitation Academy curriculum to share local strategies for success and enable other communities to improve their cardiac arrest care and survival rates.

For more information on the Resuscitation Academy, visit <http://www.resuscitationacademy.org>.

#### **7. EMT Advisory Council**

The success of the regional EMS system relies heavily on strong partnerships and collaboration between the EMS Division and EMS personnel. To strengthen these connections, the EMS Division created the EMT Advisory Council (EMTAC) in 2009 which engages field providers in shaping policies, programs, research designs, and day-to-day service interactions.

#### **8. Limited English Proficiency (LEP) Callers Study**

Completed in 2010, this study evaluated Limited English Proficiency (LEP) and the provision of bystander CPR to victims of cardiac arrest. The study looked at the frequency and impact of LEP callers on the recognition of cardiac arrest and the timeliness of CPR instruction and bystander CPR performance. The results of this evaluation led to the development of the Vulnerable Populations Pilot project, a new Strategic Initiative for the 2014-2019 levy span, to assure that EMS care is the best possible, regardless of race, ethnicity, age, socioeconomic status, culture, gender or language spoken.

#### **9. Socioeconomic Status Study**

This study, completed in 2010, examined the relationship between traditional socioeconomic status characteristics and survival from cardiac arrest (see EMS 2010 Annual Report for details).

### 10. Long Term Outcome of Pediatric Cardiac Arrest

Little is known about best treatments for the rare event of a child experiencing an out-of-hospital cardiac arrest. This study aimed to increase the understanding of the long term implications for children who survive to hospital discharge in King County outside of Seattle. Looking ahead, the study population is being expanded to include patients from Seattle. The results will help guide care and expectations for clinicians and families whose child suffers a cardiac arrest. A scientific report on this topic was accepted for publication in 2013.

### 11. Cardiac Arrest in Exercise Facilities

This study examined cardiac arrest at exercise facilities and evaluated the impact that on-site AEDs have on survival from cardiac arrest. Study data regarding the frequency and characteristics of such events may be used to assist planning efforts for medical emergencies at exercise facilities. Watch for final results to be published in the near future.

### 12. Antiarrhythmics Used in Cardiac Arrest

The EMS Division undertook a systematic evaluation of the effect of American Heart Association guidelines on survival from cardiac arrest specifically due to non-shockable arrhythmias. This included looking at outcomes of non-shockable cardiac arrest patients, and the administration of cardiac arrest medications during ongoing uninterrupted CPR after defibrillation shock (see the EMS 2011 Annual Report for details).

### 13. Police Defibrillation

Efforts to improve resuscitation primarily focus on providing CPR and defibrillation as rapidly as possible. Equipping police with automatic external defibrillators (AEDs) allows nearby officers to arrive sooner to an arrest patient than traditional EMS, and therefore may lead to

improved survival. Pilot project findings will be published in the near future (see the EMS 2011 Annual Report for more extensive project information).



### 2008-2013 ACCOMPLISHMENT

Through the Police Defibrillation program, the EMS Division brought law enforcement into the EMS “chain of survival” by arming police with AEDs, and making them “first responders” to cardiac arrest.



### 14. EMS Quality Improvement Audits - HIGHLIGHT p. 16.

### 15. Stroke Surveillance

In 2012, the Medical QI section initiated a county-wide pre-hospital and hospital Stroke QI program which allows the EMS Division to monitor and improve EMS care provided to suspected stroke patients. The QI section is collaborating with King County hospitals to link hospital data on stroke patients to EMS data. With an emphasis on the use of the F-A-S-T screening tool to identify stroke in patients, reducing on-scene time, transporting patients to qualified stroke hospitals, and notifying hospitals of the arrival of possible stroke patients, the EMS Division will be able to identify ways to improve patient care in the pre-hospital setting and improve coordination of patient care between EMS and hospitals. This will increase the chances of neurologically intact survival from stroke in the community.

## PROGRAM HIGHLIGHT

### 14. EMS Quality Improvement Audits

EMS responds to a wide variety of critical conditions. Delivering high quality patient care requires a systematic method to identify how EMS responses can be improved. Since mid-2011, the Medical Quality Improvement (QI) section has been conducting a series of audits to assess BLS and ALS responses to various critical conditions. In 2013, the Medical QI section has aligned QI topics with the 2013 Training Goals established for EMTs and paramedics. The results of these audits are distributed to all King County medical directors, fire department chiefs, training officers, dispatch center leaders, and hospital cardiac and stroke coordinators to encourage a culture of evaluating and improving patient care.

The current Training Goals focus on cardiac arrest, anaphylaxis, sepsis, trauma and reporting 'at patient side' time. For cardiac arrest, the goal is high performance CPR as measured by compression fraction and pauses. EpiPen indications have been changed to better recognize and treat anaphylactic patients. EMS providers must document suspected sepsis and alert the receiving hospital prior to hospital arrival. An on scene time of less than 15 minutes is expected for all serious trauma patients transported by paramedics. EMS providers must report when they arrive at the patient's side for all incidents. The Medical QI section will monitor progress towards these goals throughout the year.

In addition to the Training Goals evaluations, the QI section has completed numerous audits including hypothermia, hyperglycemia, febrile seizures, non-cardiac chest pain, overdoses, deliveries on scene, and patients left at the scene. Without a review of the care provided for a specific condition, it is impossible to identify areas for improvement. These efforts are consistent with the EMS Division's mantra of "measure and improve." Findings are reported county-wide approximately every two weeks in an email newsletter that contains an executive summary, data, and comments from the King County Medical Director.

The QI audits highlight the exceptional care that EMTs and paramedics in King County already provide to patients. The continuous review of specific medical conditions and treatments enhances efforts in areas that can result in improved patient care and a more effective EMS system.



#### 2008-2013 ACCOMPLISHMENT

The result of this ongoing quality improvement is enhanced patient outcomes, and a steadily rising cardiac arrest survival rate, currently the highest in the nation, if not the world.

For more information on the Medical QI section, visit: <http://www.kingcounty.gov/healthservices/health/ems/quality.aspx>

# PROFESSIONAL STANDARDS

**OVERVIEW:** The Professional Standards section provides initial training, continuing education, instructor education and oversight of the recertification process for nearly 5,000 Emergency Medical Technicians (EMTs) in King County. Through considerable coordination and communication among EMS stakeholders, this section develops the curricula that ensures the training and education programs meet agencies' needs and Washington state and national requirements. As the liaison between the Washington State Department of Health and the 30 EMS/fire agencies in King County, Professional Standards relays continuing education, certification, and regulatory and policy changes to EMS agencies.

## PROGRAM INDEX

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| 2. EMT Initial Training            | 6. RETRO Database  |
| 3. Competency Based Training (CBT) | 7. Regional Purchasing Program                               |
| 4. EMS Online                      | 8. EMT Scholarship Program - <a href="#">HIGHLIGHT p. 19</a> |

### 1. Patient Care Guidelines

Guidelines (or protocols) are the foundation of EMS training for EMTs and medics. Referred to as the “Blue Book,” the EMT Patient Care Guidelines outline the standards for providing pre-hospital care of patients. The Paramedic Patient Care Guidelines, written in cooperation with the University of Washington/Harborview Medical Center Paramedic Training Program, offer a standardized countywide approach to paramedic level use of medications. Guidelines will be updated in 2014.

### 2. EMT Initial Training

Initial training courses are offered in the spring and fall every year and are open to personnel from all fire/EMS agencies in King County. Each course consists of 140 hours of classroom and practical instruction along with 10 hours of hospital observation time and eight hours of “ride time” to ensure EMT certification is in accordance with Washington state law. Five individuals were recently awarded scholarships to take and complete the initial EMT course and be EMT certified by Washington state. This was offered as part of the EMS Division’s Equity and Social Justice effort to develop an EMT workforce that better reflects King County’s diverse population.

### 3. Competency Based Training (CBT)

The State of Washington mandates that EMTs complete both didactic and practical skill continuing medical education and evaluation to maintain certification. In King County, the topics are prescribed by the Medical Program Director following state and national guidelines and include six annual modules on various emergency medical topics, for a total of eighteen modules in a three year recertification cycle. In aggregate, this program is referred to as Competency Based Training (CBT). The Professional Standards staff develops, writes, produces and implements instructional training modules and the yearly curriculum.

The Professional Standards section hosts CBT Instructor workshops annually to train the 500+ instructor-evaluators who oversee the practical skills training. These day-long workshops cover topics in basic skills, new techniques, protocol updates and instructional delivery, helping to ensure that BLS personnel are up to date on the changing field of emergency medicine.

# PROFESSIONAL STANDARDS, continued

The topics for this year's CBT education include:

- High performance trauma care
- Orthopedics
- Respiratory emergencies
- Geriatrics
- Science of CPR
- Environmental emergencies
- OB/GYN

## 4. EMS Online

EMS Online is a technologically-savvy approach to continuing education. The Professional Standards staff provides technical support for the website along with an instructor hotline for questions about the courses and treatment protocols.

EMS Online began as an online continuing education program providing CBT for EMTs in King County. The program now serves paramedics, EMTs and dispatchers in large regions of Alaska, California, Idaho, Iowa, Montana, Oregon, Utah, Washington, Wyoming and Wisconsin as well as the US Navy and National Parks Service, and boasts 13,500 subscribers.

In 2013, the site was expanded to include a series of six paramedic level courses as part of the EMS Online Strategic Initiative (see p. 53).

## 5. EMT Defibrillation Quality Assurance

Early defibrillation, used in conjunction with cardiopulmonary resuscitation (CPR), is a key component in the treatment of individuals suffering a cardiac arrest. All King County resuscitations are evaluated, and the data is used for enhanced EMT and ALS resuscitation training that complements traditional hands-on training. EMS uses the web-based Cardiac Case Review tool for performance feedback (see p. 23).

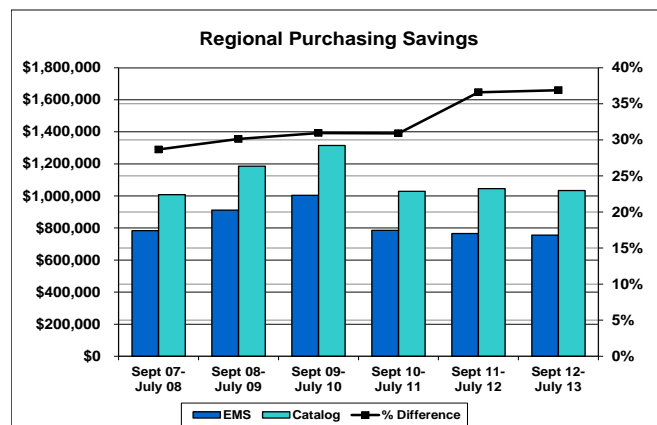
## 6. The RETRO Database

The RETRO database has led to great efficiencies in the realm of data quality, management and retrieval. The system allows the EMS Division to store, track and access essential information related to EMS personnel across King County electronically. To date, RETRO contains nearly 37,300 electronic record sets, documenting dates and requirements related to certification and recertification, reciprocity, practical skill set completion certification, and teaching certification requirements. A service module to catalog EMS training course records was developed within RETRO over the past year.

## 7. Regional Purchasing Program

The Regional EMS Supplies and Equipment Purchasing Program was first created in 1998 and continues to deliver significant savings for King County Medic One and the region's fire departments through leverage gained in combining the purchasing power of 30 agencies. Intergovernmental purchasing agreements allow these departments to purchase off the King County contract.

As reflected in the graph below, data comparing actual costs to catalog prices confirm consistent savings to the region over the past six years.



## 8. EMT Scholarship Program - HIGHLIGHT p. 19 (NEW TO THIS REPORT)

## PROGRAM HIGHLIGHT

### 8. EMT Scholarship Program

The Medic One/EMS system of King County is recognized as one of the best emergency medical service programs in the country. Its personnel are some of the most highly trained and practiced providers of EMS care anywhere, and the regional system looks within its own communities first in its search to find the best and brightest to join its ranks. Most EMS agencies have acknowledged, however, that the make-up of the EMS workforce doesn't adequately reflect the cultural diversity of the County or the communities served. In line with King County's Equity and Social Justice commitment to making the region a place where all people can reach their full potential, the EMS Division adjusted its recruitment and training strategies to reduce barriers that may have deterred individuals from pursuing EMT training classes and, subsequently, from considering a future within the EMS system.

EMS identified three specific areas that could draw a wider variety of students to taking EMT classes if improved:

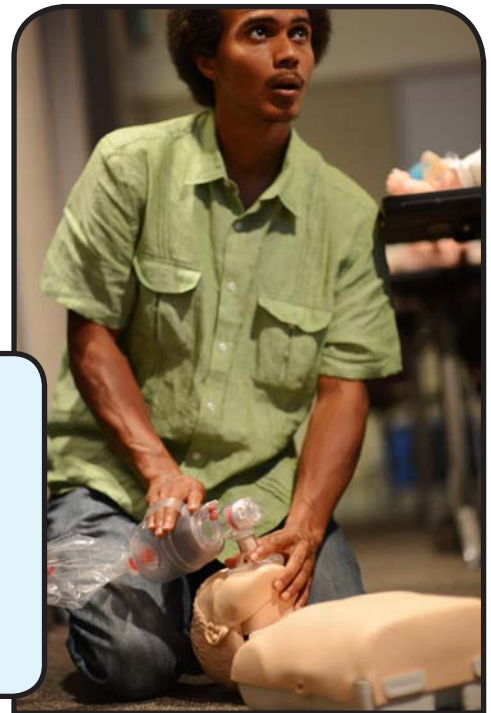
- **Financial means:** The EMS Division provides initial EMT training to personnel from all fire/EMS agencies in King County at no cost. An individual who is interested in becoming an EMT, but who is not affiliated with an agency, would need to assume the financial burden for the training, which might deter prospective students from enrolling in the class. To remedy this, the EMS Division created five scholarships providing access to this training at no cost.
- **Announcing the program:** New programs, like these scholarships, need to be well publicized, and recruitment efforts targeted to reach a wider audience. King County Human Resources partnered with public health and social service agencies out in local communities to help broadcast the new program to reach and engage a broader pool of potential students.
- **Belonging, or "fitting in":** Most EMT trainees are typically either "paid" or "volunteer" firefighters sent by their sponsoring fire department. Therefore, they already know each other and already have a sense of camaraderie. To assist in making non-sponsored students feel included, the EMS Division made t-shirts for students not affiliated with a department so they could wear their own 'uniform' and establish their own small "agency".

The EMS Division is working with EMS partners, such as Rural Metro, who are very receptive to employing scholarship students. The EMT Scholarship Program will continue in the 2014-2019 levy period as one of the major objectives in the Vulnerable Populations Strategic Initiative.



#### 2008-2013 ACCOMPLISHMENT

The EMS Division created five scholarships to recruit students with diverse backgrounds into the intensive 150-hour EMT certification course. The Division recruited for "diversity" as the applicants chose to define it, and in six weeks, it received more than 300 applications. As of June 2013, 10 scholarships have been awarded. Of those that completed the class, all have passed their National registry exam, paving the way for finding employment within the EMS field.



For more information on the Professional Standards section, visit: <http://www.kingcounty.gov/healthservices/health/ems/training.aspx>

# CENTER FOR THE EVALUATION OF EMS (CEEMS)

**OVERVIEW:** The Center for the Evaluation of Emergency Medical Services (CEEMS) has been conducting research studies since 1987. These studies are aimed at improving the delivery of pre-hospital emergency care and advancing the science of cardiac arrest resuscitation through collaboration between the EMS Division and academic faculty from the University of Washington. Funding for these activities comes from private foundations, state agencies, and federal institutions. Achievements made by this collective effort continue to improve outcomes from sudden cardiac arrest and advance evidenced-based care and treatment.

## PROGRAM INDEX

- |   |   |
|---|---|
| 1. Resuscitation Outcomes Consortium (ROC)  | 8. Washington CARES   |
| 2. ROC - Pre-hospital Resuscitation Using an Impedance Threshold Device and Early versus Delayed Rhythm Analysis (PRIMED) | 9. Cardiac Case Review  |
| 3. Home Automated External Defibrillator Training of High-Risk Patients   | 10. ROC - Continuous Chest Compressions (CCC) Study                                   |
| 4. Program to Integrate Technology and Cardiac Arrest Resuscitation (PITCAR)  | 11. ROC - Amiodarone-Lidocaine-Placebo (ALPS) Study - <a href="#">HIGHLIGHT p. 22</a> |
| 5. Mentorship   | 12. Simulation Training to Improve 9-1-1 Dispatcher Identification of Cardiac Arrest  |
| 6. VF Waveform Library  | 13. Crash Injury Research and Engineering Network (CIREN) Study                       |
| 7. Heart Rescue Flagship Program  | 14. EMT Injury Prevention Grant   |

### 1. Resuscitation Outcomes Consortium (ROC)

The Resuscitation Outcomes Consortium is a network of 10 North American sites funded by the National Institutes of Health and the Canadian Institute for Health Research to conduct clinical trials in the management of out-of-hospital cardiac arrest. As an active participant in ROC trials over the past 10 years, the EMS system in King County greatly contributes to advancing scientific knowledge and improved care not just for its residents, but for patients across the globe.



### 2. ROC – Pre-hospital Resuscitation Using an Impedance Threshold Device and Early versus Delayed Rhythm Analysis (PRIMED)

This study assessed CPR timing strategies and the use of a device designed to improve blood flow during cardiopulmonary resuscitation. The study was completed in 2010 (see EMS 2010 Annual Report for details).

### 3. Home Automated External Defibrillator Training of High-Risk Patients

This evaluated four different approaches for training family members of high-risk patients to use automated external defibrillators. The study was completed in 2010 (see EMS 2010 Annual Report for details).

#### 4. Program to Integrate Technology and Cardiac Arrest Resuscitation (PITCAR)

The EMS Division continues to explore, develop and enhance technologies to improve outcomes from cardiac arrest. This is possible due to a grant from the Life Sciences Discovery Fund of the Washington state legislature. Tools developed are interrelated and are directed at strengthening the links in the “chain of survival” - early activation of 9-1-1, early and increased bystander CPR, public access to early defibrillation, delivery of BLS and ALS services, and post-resuscitation care. These include:

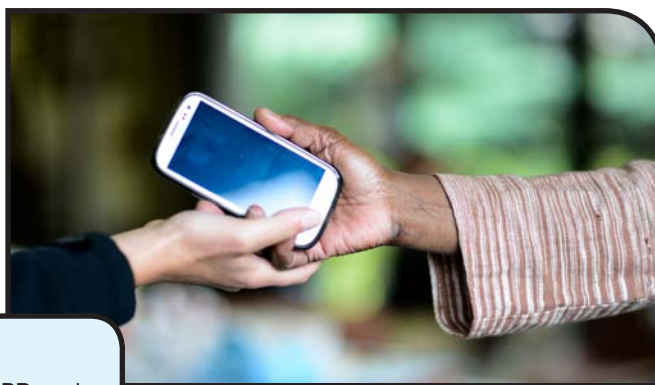
- **Cardiac Case Review** (see #9, p. 23);
- The **Ventricular Fibrillation (VF) Waveform Library** (see #6, p. 22);
- **Advanced software applications** that are being developed to guide resuscitation and care of patients in ventricular fibrillation through the study of the VF waveform. These applications will minimize interruptions in CPR by improving rhythm identification while CPR is ongoing. Interruptions in CPR are associated with a lower chance of survival;
- The **People’s Defibrillator** which represents a collaboration between EMS and the University of Washington engineering school to develop an inexpensive, personalized automated external defibrillator (AED) for wide-scale distribution to the community;

- **Toolkits** that provide step-by-step instructions for implementing life-saving programs such as Community CPR, Dispatcher-Assisted CPR, Public Access to Defibrillation (PAD), Police PAD, Cardiac Arrest Registry, and High-Performance CPR in EMS agencies outside of King County and Seattle. They are provided for free to participants attending the Resuscitation Academy (see p. 14).

**Life Sciences**  
**DISCOVERY FUND**

#### 5. Mentorship

Each year, affiliate clinicians and researchers, such as medical students, physicians and EMS professionals, are provided the distinctive opportunity to engage in a research project under the mentorship of CEEMS staff. A number of peer-reviewed publications and a wealth of data have resulted from these opportunities, often advancing scientific understanding of sudden cardiac arrest and improving outcomes.



#### 2008-2013 ACCOMPLISHMENT

Free applications providing audio-visual instructions for CPR and AEDs are available for the Apple iPad, iPhone, and Google Android phone. The iPad and iPhone applications are available in English and Spanish.

## PROGRAM HIGHLIGHT

### 11. ROC - Amiodarone-Lidocaine-Placebo (ALPS) Study

Antiarrhythmic medications (amiodarone, lidocaine) are frequently used as part of advanced care to treat ventricular arrhythmias that persist or recur after shock during a cardiac arrest. Although much is known about the pharmacological effects of these drugs, none has ever been demonstrated to improve survival to hospital discharge after cardiac arrest. It



Both the CCC and ALPS trials will determine the impact of the study treatment on the all-important endpoint of survival to hospital discharge and neurological outcome.

is not known whether these drugs may actually cause more harm than good. The Amiodarone, Lidocaine or neither (Placebo) Study (ALPS) aims to determine whether the early administration of a new formulation of IV amiodarone improves the survival to hospital discharge rate compared to lidocaine or a placebo in patients with out-of-hospital cardiac arrest due to shock-resistant ventricular fibrillation.

ALPS, a multicenter trial being conducted by the Resuscitation Outcomes Consortium (ROC), is designed to answer two critical questions: (1) are antiarrhythmic drugs effective for the treatment of VF cardiac arrest? (2) If so, is amiodarone or lidocaine preferable for such treatment? Answering

these questions will determine the proven role (if any) of antiarrhythmic drugs for future generations of patients with out-of-hospital cardiac arrest. In May 2012, King County Medic One became the first organization to enroll patients in ALPS, the sponsor of ROC. To date, nearly 600 patients have been enrolled in ALPS across North America, already making it the largest out-of-hospital antiarrhythmic drug trial of cardiac arrest ever performed. In Seattle and King County, 76 patients were enrolled in ALPS during the first half of 2013 for a total of 131 patients since the trial's start. Over the next two years, ALPS plans to enroll a total of 3,000 patients with shock-resistant cardiac arrest. The results of this trial are likely to impact resuscitation practice worldwide.

#### 6. Ventricular Fibrillation (VF) Waveform Library

Consisting of electrocardiograms (ECGs) from electronic downloads captured by BLS and ALS defibrillators, this library provides a rich and growing repository of information that can be used to better understand the heart's physiological status and which therapies are likely to successfully restore a pulse and heartbeat.

#### 7. Heart Rescue Flagship Program

The Heart Rescue Flagship Program, funded by a grant received in 2011 from the Medtronic Foundation, establishes a state-wide standardized set of information to collect and report cardiac arrest data. This can be used to implement programs aimed at improving the care and treatment of out-of-hospital cardiac arrest. The EMS Division is partnering with other Washington agencies to

establish an integrated state-wide cardiac arrest registry (Washington CARES).

#### 8. Washington Cardiac Arrest Registry to Enhance Survival

The State of Washington is now part of a national effort in cardiac arrest surveillance and improvement. Through Washington CARES, communities can compare their EMS system performance to de-identified aggregate statistics at the local, regional, or national level and discover promising practices that could improve emergency cardiac care.



#### 2008-2013 ACCOMPLISHMENT

The EMS Division was recruited to participate in a national cardiac arrest registry (CARES) and enroll other Washington state EMS agencies into the program. King County has been a front runner in cardiac arrest surveillance, and its involvement in CARES will strengthen this national effort.

## 9. Cardiac Case Review

Regular and consistent feedback to individual BLS and ALS providers on their performance during a cardiac resuscitation is available on-line, at any time of day and any location, through the web-based Cardiac Case Review tool (highlighted in the 2012 Annual Report).



### 2008-2013 ACCOMPLISHMENT

The Cardiac Case Review tool provides immediate micro-details on cardiac arrest cases, impacting the system's clinical practices. The EMS system in King County is the first and only organization to use this technology.

## 10. ROC - Continuous Chest Compressions (CCC)

In 2012, participants were enrolled in this trial that will compare traditional CPR against CPR performed without interrupting chest compressions (see HIGHLIGHT in King County Medic One section on p. 36).

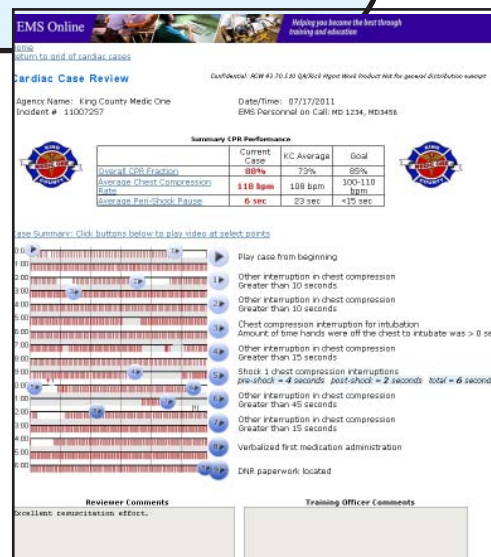
## 11. ROC - Amiodarone-Lidocaine-Placebo Study (ALPS) - HIGHLIGHT p. 22

## 12. Simulation Training to Improve 9-1-1 Dispatcher Identification of Cardiac Arrest

Emergency medical services dispatchers are trained to provide CPR instructions to bystanders over the phone while waiting for EMS responders to arrive. Dispatcher-assisted CPR has been shown to significantly increase a patient's chances of survival from cardiac arrest. This grant, funded by the Agency for Health Care Research & Quality, will implement a 9-1-1 call simulation training to test whether experience with mock calls combined with feedback will improve the ability of dispatchers to identify cases in cardiac arrest at the time of the call.

## 13. Crash Injury Research and Engineering Network (CIREN) Study (NEW TO THIS REPORT)

The National Highway Traffic and Safety Administration is funding this opportunity to review how well data collected by a vehicle's crash box and transmitted to a 9-1-1 receiving point could assist dispatchers in sending the most appropriate response vehicle. The potential benefits include reducing response times to the scene of an accident, greater efficiencies in the use of emergency



services resources, and higher survival rates from vehicular crashes.

## 14. EMT Injury Prevention Grant (NEW TO THIS REPORT)

EMS personnel experience a much larger than average number of work-related injuries or illnesses. Back injuries are especially prevalent, due to the nature of these jobs that require bending and lifting while caring for and moving patients. Such injuries result in higher rates of missed work and medical evaluations, along with greater difficulties performing not just EMS duties but also carrying out daily activities. The EMS Division, in partnership with the University of Washington, will identify the range of influences associated with back injuries to develop a program targeted at pre-hospital care providers to reduce such risks. Expected to finish in September 2013, the results should be available for reporting in the 2014 Annual Report.

# CPR AND PUBLIC ACCESS DEFIBRILLATION

**OVERVIEW:** Cardiac arrest is one of the most life-threatening of all pre-hospital medical emergencies. Numerous clinical studies have demonstrated that patients who receive early cardiopulmonary resuscitation (CPR) and early defibrillation have a significantly improved chance of survival from cardiac arrest. The EMS Division offers a number of programs to provide CPR and Automated External Defibrillator (AED) training to residents of King County, while also working to place these devices in public locations and encourage the public to register their AEDs.

## PROGRAM INDEX

1. King County Student CPR/AED Program
2. Community Responder Defibrillation Program
3. Regional Approach to Municipal Public Access AED Registry and Training (RAMPART)

### 1. King County Student CPR/AED Program

This program trains secondary school students (grades 6–12) in King County to perform CPR and use an AED in American Heart Association-approved classes taught by their teachers and local firefighters. Over the 2012–2013 school year, a total of 11,786 students and 1,307 teachers were trained, while 97 teachers and coaches were educated to become CPR instructors themselves. Many schools are currently equipped with AEDs.

During its 2013 session, the Washington state legislature passed House Bill 1556 which adds CPR to Washington state high schools' curricula. House Bill 1556 requires that all Washington state high school students learn CPR prior to graduation through school-provided CPR training. The EMS Division will work with its existing partner school districts in King County to assist with the implementation of this legislation.

### 2. Community Responder Defibrillation Program

While AEDs were approved by the FDA for use by the public in the 1990's, they have only become widely available over the past decade. Studies have shown a 70–80% chance of survival if an AED is used within minutes of someone having a sudden cardiac arrest. However, AEDs can only help if we know where they are located, and if people know how to use them.

Getting AEDs out in the community, registering them and then teaching people to use the device is the goal of the Community Responder Defibrillation program. The EMS Division places AEDs in King County public facilities and offices, and trains King County staff to use them. EMS also works with businesses, schools, and other organizations to place and register their AEDs. Working with local fire departments, EMS locates unregistered AEDs and gets them registered.



#### 2008-2013 ACCOMPLISHMENT

In 2012, the EMS Division launched the Shockingly Simple – Restart a Heart public awareness campaign to promote the acquisition and registration of AEDs. This resulted in over 250 new AED registrations over the past year (see p. 50 for details of this Strategic Initiative).

### 3. Regional Approach to Municipal Public Access AED Registry and Training (RAMPART)

The EMS Division partners with cities to purchase and place AEDs in public settings and train city/county employees on their use. The EMS Division maintains the Public Access Defibrillation Registry and encourages cities to seek out and identify unregistered AEDs in their communities. Eighteen cities participated in 2013 (see EMS 2010 Annual Report for details).

The EMS Division will continue to offer the Student CPR/AED program, the Community Responder program and RAMPART during the 2014-2019 EMS levy span.

Many AEDs can be found by exits, in lobbies, near elevators and near fire extinguishers.



# 2,864 AEDs REGISTERED



#### WHAT happens after it is registered?

When AEDs are registered, dispatch centers alert callers to the nearest AED location, leading to early defibrillation and, quite possibly, saving a life.

#### WHY register?

State law RCW 70.54.310 requires that AED owners notify the local emergency medical services organization about the existence and the location of their defibrillator.\*



\*see Appendix F: Public Access AEDS - King County for a map of AED locations in King County

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# CRITICAL INCIDENT STRESS MANAGEMENT

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**OVERVIEW:** *The EMS Division’s Critical Incident Stress Management (CISM) Program has been a regional leader in its mission to support the mental health of police, fire, EMS, corrections officers and emergency dispatch professionals. For 25 years, its all-volunteer intervention team has been available 24 hours a day, 7 days a week, to provide counseling to those who are subjected to stress events and major crisis incidents. With CISM requests being handled through inter-agency cooperatives and by provider agencies, EMS Division CISM requests dropped by approximately 60% over the past five years. EMS Division leadership, along with the EMS Advisory Task Force which was convened to develop the next levy proposal, acknowledged that CISM requests were being handled more efficiently and effectively at the agency level, rather than through the County’s regional program. Subsequently, all parties concurred that the program would be sunsetted, beginning 2013.*

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## EMERGENCY MEDICAL DISPATCH

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**OVERVIEW:** *Emergency Medical Dispatchers (EMDs) in King County play a vital role in the EMS continual “Chain of Survival” as the first point of contact with the public. They are trained by the EMS Division in Criteria Based Dispatch, which uses specific medical criteria, based on signs and symptoms, to send the proper level of care with the proper urgency. This allows patients with critical medical conditions to receive an ALS response, and those with less critical conditions to receive either a BLS response, or a transfer to the telephone nurse-line. EMDs are trained to quickly identify patients experiencing stroke symptoms and are responsible for prompting the stroke response protocol used by responders in an effort to get the patient to the most appropriate designated stroke center. Dispatchers also provide pre-arrival instructions for most medical emergencies and guide the caller through life-saving steps – including Dispatcher-Assisted Cardiopulmonary Resuscitation (CPR) and Automated External Defibrillator (AED) instructions – until the Medic One/EMS providers arrive. Studies have shown this intervention increases the likelihood that the patient will survive a sudden cardiac arrest event.*

### PROGRAM INDEX

- |  |  |
|--|--|
| 1. Criteria Based Dispatch (CBD) Training                            | 4. EMD Awards - <a href="#">HIGHLIGHT, p. 29</a>   |
| 2. CBD Continuing Education  | 5. Revision of Criteria Based Dispatch (CBD) Guidelines  |
| 3. Emergency Medical Dispatch (EMD) Quality Improvement (QI) Program | 6. Communities of Care (previously referred to as Nursing Homes, Adult Family Homes, Boarding Homes and General Medical Clinics) |



### 1. Criteria Based Dispatch (CBD) Training

The EMS Division oversees the basic training of dispatchers from four communication centers. The training is participant-centered with simulation exercises and enhanced scenario-driven content. The course content is aimed at the quick identification of an unstable patient and the delivery of pre-arrival instructions. This training occurs during the first several months of employment, prior to answering 9-1-1 emergency medical calls.

### 2. CBD Continuing Education

King County dispatchers must complete eight hours of continuing medical education to remain informed on trends and emerging medical standards for patient care. At least half of these credits can be obtained by using EMS Online right from dispatcher consoles, and are supplemented with in-classroom instruction. In addition to

these requirements, dispatchers also have opportunities to attend cultural and professional development training (see Advanced Training Strategic Initiative on p. 40).

### 3. EMD Quality Improvement (QI) Program

The EMD Quality Improvement (QI) program allows the EMS Division to identify issues and system-wide trends that are used to develop courses for continuing education and individual feedback. By reviewing call audio and records, the EMS Division assesses individual dispatchers and develops specific training based on that review, ensuring excellent patient care, better management of ALS resources, and limited future risks. The data from the Dispatcher-Assisted CPR quality improvement project is used to identify benchmarks and target performance times for the recognition of cardiac arrest and the delivery of Telephone (Dispatcher-Assisted) CPR instructions.



# EMERGENCY MEDICAL DISPATCH, continued

The EMS Division has collaborated with King County EMD Public Safety Answering Points (PSAPs) to develop a standardized QI evaluation and reporting process. Once complete, such a system will permit the EMS Division to more quickly identify performance trends and CBD program application, and provide more timely feedback to employees and PSAPs. Additionally, EMD QI evaluation training has been provided to PSAP supervisors and QI managers to ensure consistency in EMD QI evaluations between the EMS Division and PSAP QI evaluators.

## 4. EMD Awards - **HIGHLIGHT p. 29**

### 5. Revision of Criteria Based Dispatch (CBD) Guidelines

9-1-1 call-receivers and dispatchers follow CBD Guidelines to accurately determine the level of care required by patients. Every three years, the EMS Division reviews these Guidelines to identify potential areas for revision that could safely limit the frequency with which ALS is dispatched. During the 2008–2013 levy, the CBD Guidelines were revised and published twice - in 2010 and in 2013.

The ultimate objective of revising the CBD Guidelines is to provide the most appropriate response for the patient. However, Guideline revisions have had positive effects on managing ALS resources in the EMS system.

## 6. Communities of Care

The Communities of Care Project is a productive collaboration between the EMS Division, Fire Departments, the Washington State Department of Health & Human Residential Care Services, and the administrators of Adult Care facilities. The program provides training to care facility staff and builds relationships between service providers working toward the shared goal of delivering quality patient care to residents.

Favorable evaluations from course participants and facility administrators are nearing 100%, citing the value in understanding how the EMS system in King County coordinates with 9-1-1 Emergency Medical Dispatchers to triage requests, send appropriate resources, and provide proper pre-arrival instructions.

Future plans include offering the training and intervention program to additional facilities county-wide. Although this will require additional resources for staff and materials, it will strengthen and improve performance while decreasing the number of inappropriate calls to 9-1-1.



### 2008-2013 ACCOMPLISHMENT

The King County Auditor's Office conducted annual financial and performance audits during the 2008-2013 levy span. One of their major findings concluded that over \$49 million was avoided due to revisions to the Criteria Based Dispatch guidelines between 1998-2008.

For more information on this and other EMD projects, please visit:  
<http://www.kingcounty.gov/healthservices/health/ems/emdprogram.aspx>

## PROGRAM HIGHLIGHT

### 4. EMD Awards

Every year, the EMS Division is honored to recognize the outstanding and critical work of its valued partners, the 9-1-1 emergency medical call-receivers and dispatchers in King County.

The 2013 award recipients are Wendy Glover from Valley Communications Center (Valley Com) and Devin Pekema and Mark Wood from NORCOM. Ms. Glover received two awards, one for sustained exemplary performance and another for exemplary handling of a critical EMS incident. Ms. Glover used her expertise to calm a very frantic caller and within seconds persuaded him to immediately begin chest compressions on an unconscious patient, all while reassuring the caller “You can do this!” Her swift and prompt action, coupled with her ability to remain focused, was a key component in this resuscitation effort.

Mr. Pekema received his award for sustained exemplary performance. Mr. Wood also received his award for exemplary handling of a critical Emergency Medical Services incident. Mr. Wood promptly recognized the need to provide CPR for the caller’s son who had collapsed. Mr. Wood was able to get the caller to remain focused on the task at hand, minimizing the time to starting chest compressions.

The 2013 awards were presented during National Telecommunicator week, providing an opportunity to thank not only the award recipients but all of the emergency medical dispatchers serving the citizens of King County. It is because of their commitment to quality patient care and the maintenance of a critical system that we are able to sustain this world-class system of pre-hospital care.



VALLEY COM

#### **Wendy Glover**

Sustained Exemplary Award for  
Performance in 2012

AND

Exemplary Handling of a  
Critical Emergency Medical Services  
Incident Award

NORCOM

#### **Mark Wood**

Sustained Exemplary Award for  
Performance in 2012

AND

#### **Devin Pekema**

Exemplary Handling of a  
Critical Emergency Medical Services  
Incident Award



# INJURY PREVENTION

**OVERVIEW:** *Injury is the leading cause of death for those under 45 years of age, while for the elderly, falls account for many hospitalizations. The EMS Division has invested considerable time and effort into building long term relationships with fire departments, community agencies and organizations that work toward the common goal of reducing injury and death through injury prevention and public education programs.*

## PROGRAM INDEX

### PROGRAM INDEX

- |                                       |  |
|---------------------------------------|--|
| 1. EMS Child Passenger Safety Program | 3. Smart Kids! Safe Kids!                              |
| 2. Think Again                        | 4. Distracted Driving Project - <b>HIGHLIGHT p. 31</b> |

#### 1. EMS Child Passenger Safety Program

Placing children in car seats that are size and age appropriate can reduce serious and fatal injuries by more than 50%, but only if properly installed and used.



For more than ten years, the EMS Division has worked with various partners to keep our most precious cargo safe and secure. Through its Child Passenger Safety Program, National Highway Traffic Safety Association-certified Community Health Workers and EMS staff have provided car seat education and car seats to clients who are enrolled in the Maternity Support Services program. Education and community resources are also available to parents enrolled in the Infant Case Management program

at the Renton, Federal Way and Auburn Public Health clinics. This program will continue to be offered during the 2014-2019 EMS levy span. In 2012, 405 clients received car seat education and seats through the program; in the first three months of 2013, nearly 160 clients were served.

#### 2. Think Again

The Think Again program educates teenagers on the consequences of drinking and driving. The EMS Division no longer provides this program when it was taken over by the King County Fire and Life Safety Association and funded for several years by grants from the Washington State Traffic Commission (see the EMS 2010 Annual report for details).

#### 3. Smart Kids! Safe Kids!

The Smart Kids! Safe Kids! Injury Prevention Program was developed by the EMS Division and the Seattle Fire Department to educate teachers on fire and life safety issues. Preschool teachers were able to get State Training And Registry System credits so the EMS Division no longer provides this program (see the EMS 2010 Annual report for details).

## PROGRAM HIGHLIGHT

### 4. Distracted Driving Program

#### Background

The National Safety Council estimates that more than one out of every four motor vehicle crashes involves cell phone use at the time of the crash. In 2010, 21% of all crashes nationally involved talking on cell phones, and a minimum of 3% involved texting. Using cell phones while driving is a cognitive distraction and takes your mind off the road. Drivers using cell phones look at, but fail to see, up to 50% of the information in their driving environment. They miss visual clues that are critical to safety and navigation, tend to go through red lights and stop signs, and miss important navigational signage and exits.

#### Description

In 2012 and 2013, the EMS Division partnered with the City of SeaTac Police Department and the Washington State Patrol to launch a distracted driving campaign. Its objective was to educate drivers who were observed using their cell phones about the cell phone law and the dangers of distracted driving, and to provide alternatives to cell phone use while driving.

#### Pilot 1 Objectives

The EMS Division, SeaTac and Washington State Patrol set a goal of reducing cell phone use by 15-20% from SeaTac's baseline observation. To do this, a media campaign, made possible by a generous \$10,000 grant from the Washington Association of Sheriffs and Police Chiefs, in collaboration with the Washington Traffic Safety Commission, was undertaken. The campaign included airing radio spots on seven radio stations, a KOMO TV interview of Washington State Patrol during a ride-a-long, and a KCPQ TV story. Public Health – Seattle & King County posted blogs and tweets (read by 350 people), and featured the campaign on its home page, which experienced a 17% increase in hits after the campaign period. Drivers were observed one week before and one week after the media campaign to determine whether the campaign affected drivers' cell phone usage.



## INJURY PREVENTION, continued

### Findings

There were more than 1,200 drivers using their cell phones illegally during the given time period, before and after the campaign. While there was a slight reduction in distracted drivers in the observation period after the campaign, there was not a “significant” decrease.

### Pilot 2 Objectives

223 drivers illegally speaking on cell phones received a survey, gauging their interest in not using cell phones while driving, or in using a smart phone application to limit distractions while driving. 197 returned the survey. The other 26 were either rental cars, or an incorrect license plate number had been collected.



### Findings

53 (27%) returned the survey:

- 90.5% said they would consider not using their cell phone while driving;
- 77.3% said they don't have a cell phone app; and
- 84.9% said the letter encouraged them to download a cell phone app mentioned in the letter.

### Pilot 3 Objective

SeaTac Police and Washington State Patrol will pursue another letter/survey campaign with the goal of increasing the percentage of drivers who would consider not using their cell phone while driving up to 93%. The EMS Division may propose expanding the campaign to other police departments over the span of the next levy period.

For more information on these and other injury prevention programs, please visit:  
<http://www.kingcounty.gov/healthservices/health/ems/community.aspx>

# ADMINISTRATION

The EMS Administration section is committed to ensuring integrity and transparency of the EMS system by providing financial and administrative leadership and support to both internal and external customers. It engages with regional partners to implement the EMS Strategic Plan, uses best practice in the financial management of EMS levy funds, participates in countywide business improvement processes, and ensures the continuity of business in collaboration with EMS stakeholders. In addition, Administration provides essential support to all the EMS Division sections that direct a multitude of regional programs, including contract management, personnel-related activities, budget preparation, and day-to-day operational activities.

## 2012 KING COUNTY AUDIT

The King County Auditor conducts an annual EMS audit, as established by ordinance as part of the 2007 Medic One/EMS levy approval package. While the primary mandate is a financial compliance audit, the Auditor's Office has also included a performance-oriented review each year. The findings from the four completed audits have been favorable with reasonable recommendations that the EMS Division has actively pursued to incorporate within its management practices.

The 2012 audit assessed the EMS Division's financial practices and compliance with the Council-adopted levy policies and financial plan. Staff reviewed both the overall EMS levy allocation for Basic Life Support (BLS) services, and the funding formula for allocating BLS funding among the regional fire agencies for "equity". The Auditor also provided a "mid-term review" and reported back on the Division's implementation of the levy.

The audit found that the financial operations continue to be managed in accordance with the EMS levy financial

plan and policies, and that adequate funding will be available for the last year of the current levy. It also recognized the Division's planning and careful use of levy funds to ensure potential savings that can be "carried forward" to decrease the amount of funds needed for the 2014 to 2019 EMS levy. This confirmed what had been a major component endorsed by the EMS Advisory Task Force during its levy planning process, and around which the proposed 33.5-cent levy for 2014-2019 was developed.

While the Auditor deemed the annual BLS allocation to be reasonable, the methodology for allocating BLS funds was found to result in some unequal levels of support for BLS agencies. The Auditor identified a possible future formula allocation very similar to the current formula, but with additional support to fire agencies with very low assessed values and high response times. While BLS partners have recommended continuing with the current formula for the 2014-2019 levy span, the EMS Division will work with BLS agencies in 2016 to examine the BLS funding methodology for the 2020-2025 levy period, including the one highlighted in the Auditor's report.

Finally, the Auditor noted the extensive steps that the EMS Division has taken in implementing the recommendations from past financial reviews and audits. Specifically, it highlighted actions that have increased the transparency and accountability of EMS system programs and levy funds, such as redesigning reserves, codifying fiscal and system policies, and improving how Strategic Initiative performance is evaluated and reported.

## 2013 AUDIT

The 2013 audit is currently underway and will be submitted to the King County Council in September 2013.



### 2008-2013 ACCOMPLISHMENT

For the fourth year in a row, the King County Auditor's office has reported that the EMS Division continues to manage its funds according to the regionally adopted financial plan and policies.

# KING COUNTY MEDIC ONE PROGRAM

**OVERVIEW:** King County Medic One (KCM1) is one of the six Advanced Life Support (ALS) providers in the regional EMS system. It serves approximately 450 square miles of south King County, an area with a population now close to 725,000 people. In calendar year 2012, KCM1 responded to 14,206 calls for this advanced care, including pediatric patients, mass casualty motor vehicle crashes, and cardiac emergencies.

KCM1 works in south King County as part of a coordinated system of effective emergency care that includes 9-1-1 emergency dispatch, basic life support care by fire departments, advanced life support care by KCM1, and hospital based care. KCM1's 70 paramedics work side-by-side with local fire department personnel to provide the highest quality, cost-effective emergency medical care to those in need, 24 hours a day, every day of the year.

To achieve this coordinated care approach, paramedic units co-locate with fire stations whenever possible, to promote a team atmosphere. This cost-effective strategy also eliminates the need for separate facilities. Physicians provide medical oversight for clinical care decisions and actively participate in strategic planning decisions that guide the KCM1 organization. The "medical model" that incorporates a tiered response strategy results in the best-trained, most experienced paramedic providers, who in turn serve as a critical and integral component of emergency care in King County. This system of care practiced throughout King County consistently achieves the highest benchmarks of EMS care and is recognized worldwide.

## PROGRAM INDEX

### Program Index

1. King County Medic One Medical Direction
2. Training
3. Medic Unit Relocations
4. Operations, Preparedness, and Safety
5. Administration
6. ROC - Amiodarone-Lidocaine-Placebo (ALPS) Study
7. EMIRF Replacement Project - [HIGHLIGHT p. 35](#)
8. Continuous Chest Compression (CCC) - [HIGHLIGHT p.36](#)
9. Hypothermia Study

### 1. King County Medic One Medical Direction

Dr. Tom Rea is the Medical Program Director for KCM1 and is assisted by five Associate Medical Directors for quality review, guidance for procedures, new equipment and training needs for the program. Quality assurance activities undertaken include systematic review of specific medical conditions or critical procedures, or case-based review and feedback. Assessments have demonstrated proficient care, and underscore the importance of the fundamental approach of these clinical guidelines

that require proactive paramedic implementation and involvement.

### 2. Training

#### a. Initial Training

The 10-month Initial Paramedic Training program, provided by the University of Washington/Harborview Medical Center, is the most comprehensive and intensive program in the nation. This rigorous training fully integrates classroom experience with field care, providing an unparalleled clinical education.

## PROGRAM HIGHLIGHT

### 7. King County Medic One (KCM1) EMIRF Replacement Project

KCM1 is planning to replace its existing partially electronic patient care record (EMIRF) with a fully electronic patient care records management system. As part of this project, KCM1 would purchase 14 ruggedized tablets to enable paramedics to capture patient care information electronically at the patient's side and transmit pre-hospital data to participating hospitals as patients are transported to those hospital emergency departments.

The project will optimally meet KCM1's current and future operational needs and will significantly improve patient care to benefit King County's constituents by enabling mobile field capability, automating and streamlining KCM1's processes by reducing reliance on paper forms, and improving access to data (e.g., patient outcomes).

This is part of the regional effort to enhance the current EMS data collection system (see SEND Strategic Initiative on p. 55) and leverages existing infrastructure/interfaces to improve oversight and management of the EMS system.

#### b. Continuing Education

Paramedics must complete over 50 hours of continuing education training each year that covers a broad range of topics and formats, including Harborview Medical Center Tuesday Series (three-hour educational seminars), Grand Rounds Training (reviews critical paramedic skills and important clinical scenarios), Medication of the Month, Paramedic Case-of-the-Month, and quarterly meetings with KCM1 Medical Directors.

#### c. Care Under Fire

KCM1 initiated a training program for police officers county-wide. Called "Care Under Fire," the course trains patrol officers and SWAT team members to provide lifesaving care for themselves and each other if wounded in an ongoing fire fight until EMS personnel can come to them, or they are extracted to a safe zone where EMS personnel can treat them. Currently over 1,000 officers have been trained, and training will continue for the next several months.

#### **3. EMS Medic Unit Relocations**

The EMS Division continues its relocation review on an annual basis to ensure residents are provided a timely medic unit response. Partner cities are included in the review to assure their future growth and special needs are considered.



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## PROGRAM HIGHLIGHT

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### 8. Continuous Chest Compression (CCC)

EMS in King County continues to move the needle of survival from cardiac arrest upward due to its emphasis on high performance CPR, particularly minimally interrupted CPR. Whether CPR might be further improved by avoiding the periodic interruptions in chest compressions required for breathing is not presently known.

To address this important question, the National Institutes of Health-supported Resuscitation Outcomes Consortium (ROC) is currently conducting a multi-center trial across North America that is comparing traditional CPR (during which chest compressions are periodically interrupted to give breaths) against continuous chest compression CPR (during which breaths are given without interruption of ongoing chest compressions) to determine which results in better survival from cardiac arrest. This CCC Trial has thus far enrolled 7,291 patients, 922 of whom have been contributed by King County, including 361 patients up to now. The CCC Trial plans to enroll a total of 23,600 patients over the next two years.

This potentially guideline-changing trial is being conducted with close scrutiny of each participating site's strict compliance to the study protocol. King County was recently recognized as having the highest rate of compliance in each treatment arm (>90%) of all ROC sites across North America, another testimony to the professional caliber and performance of EMS personnel.

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#### 4. Operations, Preparedness and Safety

KCM1 medics began using the Physio Control Lifepak 15, a new standard in emergency ALS care and the most clinically and operationally innovative monitor/defibrillator available to date. The units now have WiFi capabilities, allowing for rapid information flow and feedback from the Medical Director to medics. All cases of cardiac arrest are reviewed by specially trained staff members and physicians.

#### 5. Administration

KCM1 manages hundreds of vendor and venue contracts required to support 24 hour/7 day a week operations, payroll, procurement of supplies, and records management. KCM1 is the lead contract agency for the Regional Purchasing contracts (see p. 18 for details).

#### 6. ROC - Amiodarone-Lidocaine-Placebo (ALPS) Study

ALPS plans to enroll 3,000 patients with shock resistant cardiac arrest across North America over the next

two years. The results of this trial are likely to impact resuscitation practice worldwide (see HIGHLIGHT in CEEMS section on p. 22).

#### 7. King County Medic One (KCM1) EMIRF Replacement Project - **HIGHLIGHT p. 35**

#### 8. Continuous Chest Compression (CCC) - **HIGHLIGHT above**

#### 9. Hypothermia Study

The EMS Division actively participated in a trial aimed to determine if initiating hypothermia with cold IV fluids in the field after a successful resuscitation from out-of-hospital cardiac arrest will improve survival and favorable neurological outcome. Supported by the National Institutes of Health, this trial was recently completed, with nearly 600 patients randomized to field cooling or usual care across Seattle and King County. Results are in the process of being analyzed.

For more information on KCM1, visit: <http://www.kingcounty.gov/healthservices/health/ems/MedicOne.aspx>

## 2008-2013 STRATEGIC INITIATIVES

The Medic One/EMS 2008-2013 Strategic Plan contains specific Strategic Initiative projects designed to improve EMS services, manage growth of the EMS system, and contain costs. The following section describes the Strategic Initiatives undertaken during the 2008-2013 levy span. The table below summarizes recommendations for each Strategic Initiative in the 2014-2019 levy period.

<b>Table 1: Strategic Initiative Summary Table</b>	
<b>Strategic Initiative</b>	<b>2014-2019 Levy Status</b>
<b>Emergency Medical Dispatch Enhancements</b>	
1. CBD/CAD Integration Project	Convert to Regional Services to complete NORCOM/New World and VCC/Tiburon integration.
2. Dispatch Center Performance Standards	Convert to Regional Services for continued compliance and implementation of new standards.
3. Advanced EMD Training Program	Convert to Regional Services to enhance training and test applicable training and course-specific evaluation tools.
4. Better Management of Non-Emergency Calls to 9-1-1	Convert pieces to Regional Services; retool other pieces and continue as BLS Efficiencies Strategic Initiative.
A. Telephone Referral Program/Nurseline Evaluation	Convert to Regional Services to continue and monitor enhanced rapid dispatch efforts.
B. Community Medical Technician (CMT) Pilot Project	Continue to examine cost efficient options for service delivery.
C. Taxi Transport Voucher (TTV) Project	Continue to broaden as BLS Efficiencies Strategic Initiative.
<b>Injury Prevention - Fall Prevention</b>	
1. Community Awareness Campaign – SHAPEUP 50+	Convert to Regional Services to broaden offerings.
2. Small Grants Program for BLS Agencies	Convert to Regional Services to continue engaging community.
3. Expansion of the One Step Ahead Fall Prevention Program	Convert to Regional Services to increase enrollment.
4. Grant and Other Funding Opportunities	Discontinue due to lack of revenue.
<b>Public Access Defibrillation Campaign</b>	Convert to Regional Services to carry forward momentum generated.
<b>Interactive Enhancements to EMS Online</b>	Convert to Regional Services to redesign content, increase offerings, incorporate content delivery and format.
<b>Systemwide Enhanced Network Design (SEND) Project</b>	Convert to Regional Services to continue electronic records collection in field; complete remaining hospital interfaces.
<b>All Hazards Management Preparation</b>	Discontinue due to duplication of local efforts.
<b>EMS Efficiencies &amp; Evaluation Studies</b>	Retool for greater focus on measures, metrics and grants to EMS agencies.
<b>Strategic Planning for Next EMS Levy Period</b>	Convert to Regional Services to implement Strategic Plan programs.

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## STRATEGIC INITIATIVES, continued

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### **SI: Dispatch Enhancements**

The following four Dispatch Strategic Initiatives have been implemented during the 2008-2013 EMS levy.

#### **1. Criteria Based Dispatch (CBD)/Computer Aided Dispatch (CAD) Integration Project**

##### **Background**

9-1-1 dispatchers in King County use Criteria Based Dispatch (CBD) Guidelines to determine the appropriate level of EMS response. Since 2006, 9-1-1 Communication Centers in King County have been using a software version of the CBD Guidelines that facilitates a more efficient call screening process and provides data to the EMS Division for use in EMD quality improvement (QI). The demands for quick and efficient call processing at the large 9-1-1 centers in King County require an interface between eCBD and CAD. Due to low call volume and CAD interface cost and challenges, Enumclaw Police Department and Port of Seattle (POS) Airport Operations continue to use a version of eCBD software that does not interface with CAD.

##### **Description**

The efforts of this initiative in the current levy have focused on creating a new eCBD/CAD interface for the Northeast King County Regional Communications Center (NORCOM) and Valley Communications Center (Valley Com). Both of these centers have had extreme challenges in implementing new CAD systems during this levy period. A fully functioning version of the eCBD/CAD interface for New World Systems was developed, tested and deployed at NORCOM in September 2011, under contract with New World Systems and under project management by the EMS Division. However, the New World Systems CAD was not able to be successfully implemented for reasons not related to the eCBD software and interface. NORCOM reverted back to the Tri Tech CAD/eCBD program and call processing has been managed without incident since October 2011. The EMS Division anticipated these CAD issues would be resolved and this project could be completed in 2013, but to date it does not appear NORCOM will be able to implement the New World CAD in 2013. While it was also expected that Valley Com would have a fully functioning new Tiburon CAD by the end of the 2008-2013 levy, this is not expected to occur until 2014.

##### **Objectives**

- Eighty percent of medical calls to 9-1-1 processed using the eCBD tool within one year of implementation at a communications center;\*
- Increased use of the eCBD tool, leading to more efficient call processing and enhanced data collection for QI activities; and
- Ninety percent of medical calls to 9-1-1 processed using the eCBD tool within two years of implementation at a communications center.\*

\*Excludes certain 9-1-1 calls that are inappropriate for eCBD tool use.

##### **Results**

While using the Tri Tech version of the eCBD software, NORCOM has met all three objectives, 80% use within the first year and over 90% within in two years after implementation.

## Next Steps

Enumclaw EMS 9-1-1 calls are expected to be transferred to Valley Com in 2014. The POS will continue to use the non-CAD integrated version of the eCBD Software. eCBD/CAD Interface projects for both NORCOM/New World and Valley Com/Tiburon will be carried into the 2014- 2019 levy period.

## 2. Dispatch Center Performance Standards

### Background

During the 2008-2013 EMS levy period, the EMS Division implemented methods to strengthen the recognition of the role the communication centers play in managing the growth of EMS resources and providing more efficient services. Proper data collection, training and quality improvement practices are essential to maximizing this function.

### Description

In September 2008, the EMS Division convened EMS system representatives to develop criteria for communication center performance standards. Representation included one ALS representative from each ALS provider (not including Seattle Medic One), at least one representative from each of the four communication centers, and one BLS representative each from Zone 1 and Zone 3.

### Objectives

This project creates a list of performance standards and measurable criteria for communication centers in King County, outside the City of Seattle. Funding is provided to meet these standards.

Performance Standards	Compliance Requirements
Use of eCBD software tool for call processing of EMS calls to 9-1-1 (provided the software has been made available by the EMS Division)	80% use of eCBD tool within one year of implementation
Basic and Continuing Education Training	100% attendance at EMD Basic and Continuing Education courses, by all line employees/supervisors answering 9-1-1 calls
Data completeness standards - data elements fully populated in CAD and downloaded to RMS	Incident Address - 100% Initial Dispatch Code - 98% Alarm Time - 100% Aid/Medic Dispatch Time - 100% Geocode - 98%
Provide the EMS Division access to CAD reporting and audio recordings of 9-1-1 calls for EMD QI	100% access, unless technology or RCW restrictions apply (i.e. access to Police data)
Quality improvement	Internal Communication Center QI review of six EMS calls for each employee that answers 9-1-1 lines per calendar quarter

### Results

Communication centers are evaluated quarterly for compliance with each standard. Performance standard funding is only available for compliance with all standards; no payment is made for partial compliance.

## STRATEGIC INITIATIVES, continued

In 2012, NORCOM, Valley Com and Enumclaw Police Department complied with all of the standards. The POS Police Department has met the standard for the first quarter of 2013.

Communication Center	2008	2009	2010	2011	2012	2013 Qtr 1
Enumclaw PD	Development	Yes	Yes	Yes	Yes	Yes
NORCOM	Development	Yes	Yes	Yes	No	Yes
Port of Seattle PD	Development	No	Yes	No	Yes	Yes
Valley Com	Development	Yes	No	Yes	Yes	Yes

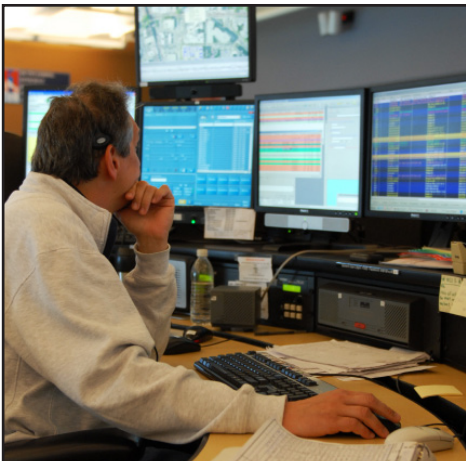
### Next Steps

This Strategic Initiative is recommended for conversion to a Regional Services program during the 2014-2019 levy. The EMS Division will work with the communication centers and EMS providers to determine new performance standards for the 2014-2019 levy period. It is anticipated that the existing performance standards will become part of ongoing contracts for training or dispatch services and that those measures will continue to be met into the next levy.

### 3. Advanced Emergency Medical Dispatch (EMD) Training Program

#### Background

In this regional system, emergency medical dispatchers play a critical role in determining when paramedic units are sent, and referring minor, non-urgent calls to a nurse referral line. Appropriate use of ALS resources is dependent upon the knowledge, skills, abilities and experience of the dispatchers. The EMS Division invests in their training and education to improve the effectiveness and efficiency of ALS dispatch and use of the nurse referral line, in support of the tiered response system. While the basic EMD and continuing education courses establish a foundation for the system, more advanced-level courses and development opportunities will enhance the knowledge and skills of dispatchers. The efficacy of the advanced training courses is evaluated through the EMS Division's extensive continuous quality improvement process and by surveying the participants, trainers, supervisors and EMS coordinator.



Advanced dispatch training concepts include the following:

- The need to provide dispatchers with opportunities to improve their understanding of cultural and language issues encountered in their daily operations;
- The desire to provide networking and more general exposure to public safety EMS issues;
- EMS/9-1-1 courses, training and conference opportunities that already exist; and
- Advanced training for more experienced emergency medical dispatchers and call-receivers.

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## **Description**

The EMS Division uses Strategic Initiative funding to reimburse dispatch agencies for the costs of sending emergency medical dispatchers to the following training courses and conferences:

### **ADVANCED EMD COURSE**

Objective: Provide experienced EMS call-receivers and dispatchers with an opportunity to discuss advanced EMS topics and address the most current evidence-based pre-hospital treatments such as Dispatcher-Assisted CPR and other emergency pre-arrival instructions.

### **QI / FEEDBACK COURSE**

Objective: Guide 9-1-1 center supervisors in developing and delivering EMD feedback to staff and dealing with Quality Improvement (QI) issues that arise; understand the QI/feedback process that occurs at the regional level and understand the consequences of undelivered feedback.

### **BASIC EMD COURSE**

Objective: Send dispatchers and call-receivers that have not been through the Basic EMD class in at least five years to retake the Basic class. Because the focus of the course has changed dramatically over the past few years, this will ensure dispatchers are operating with the most up to date materials and training.

### **CULTURAL COMPETENCE / CROSS CULTURAL COMMUNICATION COURSE**

Objective: Help 9-1-1 personnel communicate more effectively with residents of diverse communities and provide them with a better understanding of the different cultures and barriers these residents may face when interacting with public safety.

### **EMS AND 9-1-1 CONFERENCES**

Objective: Provide opportunities for 9-1-1 personnel to attend EMS and 9-1-1 conferences to obtain advanced continuing education for dispatchers and call-receivers.

### **AUDIT EMT BASIC COURSE**

Objective: Dispatchers audit the didactic portions of the EMT basic course for greater knowledge of anatomy, physiology and disease process.

## **Objectives**

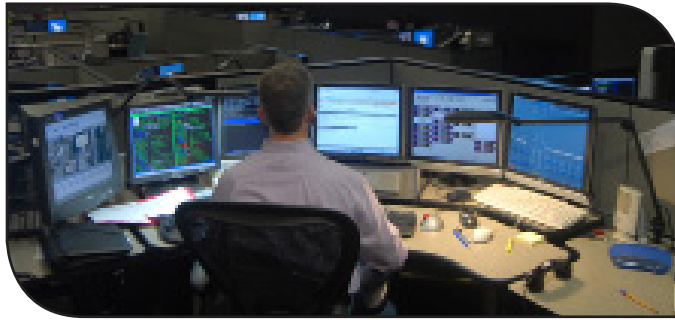
This Strategic Initiative provides dispatchers and call-receivers with additional learning opportunities in line with improving performance of their job tasks, knowledge, skills and abilities. Specific objectives include:

- At least 15% of emergency medical dispatchers in King County will take advantage of at least one Advanced EMD course annually;
- A minimum of 90% of all course attendees will report via survey that the attended course will assist them in their duties as an emergency medical dispatcher; and
- The EMS Division will offer a minimum of eight Advanced EMD courses annually.

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## STRATEGIC INITIATIVES, continued

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### Results

In 2012, six dispatchers attended the didactic portion of the Basic EMT class, and three dispatchers attended the National Association of Public-Safety Communications Officials (APCO) Conference in Minneapolis, MN. Six dispatchers attended the Washington State APCO Conference in Kennewick, WA and 22 attended a one-day workshop in Seattle. The percentage of attendance for 2012 was approximately 21%.

### Next Steps

The feedback from participants attending the Basic EMT didactic lectures was inconsistent. While many relayed the belief that certain elements of that course were somewhat beneficial, the bulk of the course did not seem to be applicable to their work as EMDs. After 2013, the Basic EMT option for advanced training will be removed, and the Advanced EMD course will be enhanced with those elements of the EMT course that were reported to be constructive.

To more clearly evaluate Advanced EMD courses in King County, the EMS Division recently conducted an occupational analysis to redesign and develop more applicable training and course-specific evaluation tools to measure how the training has improved performance and whether that improvement was sustained. One of the components of this analysis includes recommendations on advanced level training and the possible implementation of a certificated position of Advanced EMD.

Providing dispatchers and call-receivers with opportunities to improve their job knowledge and abilities assures more appropriate care will be sent. This results in better EMS system effectiveness, improved quality of pre-hospital care in the delivery of appropriate pre-arrival instructions, and helps manage the rate of growth with the appropriate use of ALS resources and nurse line referral.

## 4. Better Management of Non-emergency Calls to 9-1-1

### Background

Managing the rate of call growth in the EMS system is a regional priority and has been an ongoing focus throughout the past three levy periods. Growth in BLS responses averaged 2.8% per year from 2000 through 2008. Recognizing potential strategies for serving non-emergency patients and callers, the EMS Division undertook several Strategic Initiatives as alternatives to dispatching a BLS unit or using a BLS unit to transport a low acuity patient. Due in part to these projects, the number of BLS calls in King County (excluding Seattle) decreased in 2009 to 113,252 from a high of 114,789 incidents in 2008. While the BLS call volume continued to remain constant in 2009, 2010 and 2011, it spiked upwards again in 2012 to 118,154, a 4% increase over 2011.

During the 2008–2013 levy period, the Non-emergency Calls Strategic Initiative supported the follow projects:

### **A. Telephone Referral Program (TRP)/Nurseline (NL)**

The Telephone Referral Program/Nurseline diverts low acuity or low risk BLS calls (chronic back pain, toe fracture, flu like symptoms, tooth pain) to a 24-hour nurse for consultation when a BLS response is not deemed medically necessary.

A review conducted earlier this levy period showed that this promising approach to reducing the number of BLS responses was being underutilized - transfers to the TRP averaged 720 calls per year, or less than 1% of BLS responses - while hundreds of calls each month that met Nurseline criteria received engines and aid units instead of being transferred. One reason was the need to meet rapid dispatch policies, hindering the call receiver's ability to appropriately triage and transfer patients to the TRP/NL. To address this, the EMS Division started Enhanced Rapid Dispatch (ERD), which encourages the call receivers to rapidly dispatch units for six serious medical chief complaints, such as cardiac arrest, chest pain or seizure, and to take more time for the other complaints in order to accurately determine if the caller could be transferred to the Nurseline.

While the number of transfers initially increased, the past two years show a decline, although the transfer rate as a percentage of BLS calls is still higher than pre-ERD levels. A full evaluation of the Nurseline will begin in 2014 to regain the improvements seen in 2009 and 2010, and work toward greater gains over the span of the next levy period.

<b>Year</b>	<b>Number of 9-1-1 Callers Transferred to Nurseline</b>	<b>BLS Annual Call Volume</b>	<b>% of Overall BLS Call Volume</b>
2007	700	111,119	.006
2008	858	114,789	.007
2009	1,862	113,252	.016
2010	1,759	113,963	.015
2011	1,386	113,420	.012

### **B. Community Medical Technician (CMT) Pilot Project**

#### **Background**

Many BLS responses are for low-acuity calls that are non-emergent and do not require transport for follow-up treatment, but may still need the care of an Emergency Medical Technician (EMT) at the scene. The primary BLS response units for most EMS agencies are a two-EMT transport-capable aid unit. Not only is this an expensive response in terms of personnel and vehicle costs, but it makes those units unavailable and possibly delayed for response to patients with more serious, higher-acuity medical conditions or fire emergencies.



CMT offers a promising opportunity to provide a more appropriate response in a cost-effective manner with negligible impact to the current system.

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## STRATEGIC INITIATIVES, continued

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The CMT is a promising response model for low-acuity medical calls. Sent in non-transport capable vehicles, a CMT unit provides basic patient evaluation, assistance, specific on-scene BLS treatment, and arranges for transport if medically necessary. This helps reserve other transport-capable BLS vehicles for more serious medical and fire emergencies.

### Description

The 2008-2013 EMS levy funded two CMT pilot projects:

#### CMT Pilot I

The EMS Division first partnered with Kent Regional Fire Authority, South King Fire & Rescue, and Valley Communications Center in 2010. The five-month pilot project successfully demonstrated a “proof of concept,” showing the CMT as a response method that could provide long term EMS efficiencies in personnel costs, apparatus operating costs, deferred apparatus replacement costs, and better management of low-acuity EMS call growth, all while continuing to provide appropriate BLS care and a high level of patient satisfaction. Objectives and results of CMT Pilot I were presented in the EMS 2011 Annual Report.

#### CMT Pilot II

The second CMT pilot was implemented in February 2012, as a one-year pilot project. It had similar objectives to the first pilot, but with the additional testing of a one-responder CMT unit and a patient engagement/social service referral component. This allowed CMTs to refer patients with unmanaged medical or other needs to agencies and resources for assistance, potentially reducing a patient’s reliance on 9-1-1 and EMS response. Eastside Fire & Rescue participated with the one-responder model and was in service between 1100 and 2300 hours, 7 days per week. Woodinville Fire & Rescue participated with a two-responder model, using an in-service BLS aid unit (24 hours a day, 7 days per week) and changing the unit dispatch designation for CMT level calls.



#### PARTICIPANT COMMENT

“It was great! It was an excellent service. He just needed help getting up. He just slid, he wasn’t hurt. The program is just what we needed. It worked perfectly.”

“I was most satisfied because I didn’t feel I needed a fire truck, it would have made me more anxious. It was nice to be able to talk to someone, it put me at ease.”

## CMT Pilot II Performance Measures

1. Maximum unit response time of 20 minutes or less;
2. Average unit on-scene time at least five minutes longer than average BLS on-scene time for calls that meet CMT criteria for response;
3. Decrease by 50% the average monthly number of calls from an identified set of recurring patients, 6 months before through six months after pilot period;
4. An average of 10 patients added monthly by each agency to a patient referral database for follow-up care or assistance;
5. 75% of patients referred by fire agencies receive follow-up contact from a referral agency;
6. 75% of referred-patients follow-up and take part in referral; and
7. 95% of patients satisfied or very satisfied with treatment by CMT.

## Results

A total of 521 CMT cases and 273 control cases make up the data evaluated. As seen in Table 1, the CMT examined the patient and performed the CMT role as either a primary or secondary responder in 230 cases (44.1%); the CMT was the primary unit dispatched in all but 19 of the 230 cases. If a BLS unit was also dispatched, the CMT unit arrived ahead of the BLS unit in 1.2% of cases. Due to the Rapid Dispatch of BLS units in Zone 1, the CMT unit arrived after the BLS unit in 27 cases (5.2%). The CMT unit was cancelled en route in 148 cases (28.4%). CMT units provided special services, such as follow-up visits for welfare checks and telephone referrals, in 11.7% of cases, and other non-patient related services in 2.5% of cases.

Table 1. Distribution of CMT unit services during Pilot II, for Eastside Fire & Rescue and Woodinville Fire & Rescue.

CMT Unit Services	Frequency (N)=521
CMT examined the patient and performed CMT role	44.1%
As the primary responder	40.5%
As the secondary responder	3.6%
Responded and served as “extra hands” to other BLS/ALS units	13.2%
CMT cancelled before arrival*	28.4%
CMT Special Service^	11.7%
Other service, non-patient related~	2.5%
* CMT may not arrive due to being cancelled by BLS prior to arrival. ^ Special Service is defined as 1) follow-up detail to a previous CMT visit; 2) follow-up detail at the request of BLS unit; 3) follow-up detail as requested by patient; 4) general welfare check; 5) on view incidents; 6) response to patient/family member coming by fire station, etc. ~ Responses to non-patient related situations within the fire service	

Please refer to **Appendix H: Community Medical Technician Phase II Results** for additional results.

## STRATEGIC INITIATIVES, continued

### C. Taxi Transport Voucher

The Taxi Transport Voucher (TTV) Program allows EMTs to provide pre-paid round trip taxi cab vouchers to lower acuity patients. Initially envisioned as a one-year pilot project, the Taxi Transport Voucher program was so highly received by EMTs and patients alike that the EMS Division expanded it in July 2012 to include additional interested fire departments. Benefits include preventing an expensive ambulance transport for residents, and allowing BLS units to return to service more quickly. The TTV program highlights an innovative and cost effective way to provide the right level of transport for lower acuity patients.

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Account # 52770 Amount \$ \_\_\_\_\_  
From \_\_\_\_\_ To \_\_\_\_\_ Optional Use of Sender  
Number of Packages ☐ NO TIPS Client's Name or Other Reference \_\_\_\_\_  
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Please give white and yellow copies to Driver. Pink copy to be your file. White copy will be attached to monthly billing.  
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Received by \_\_\_\_\_ (Full Signature Please)

**GRAYTOP Yellow & Graytop Cab TRANSPORTATION ORDER** 1913202

206-282-8322 206-422-5500  
Dispatch & accounting services provided by  
Project Sound Dispatch, L.L.C. • 78 South Highway, Suite 101 • VOA 04135

Account Name KC EMERGENCY MEDICAL SERVICES PUBLIC HEALTH CPA 442398  
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### Next Steps (for Better Management of Non-emergency Calls to 9-1-1)

The Non-emergency Call Initiative has been re-tooled into the BLS Efficiencies Initiative for the next levy span. BLS Efficiencies include continuing those projects mentioned above, as well as reviewing the potential for further efforts to provide efficiencies to BLS agencies, including partnering with the Communities of Care program and discouraging unnecessary BLS transports. The CMT Program will continue during the 2014-2019 levy plan. Using a regional approach, the proposal will help further examine how to build capacity for future growth.

## SI: Injury Prevention - Fall Prevention

### Background

Falls are the leading cause of injury deaths for adults 65 years and older – among this age group, there are more accidental deaths annually in King County due to falls than there are deaths due to motor vehicle accidents. Older adults who experience a fall are two to three times more likely to fall again within one year. For elderly persons who suffer a hip fracture, half require discharge to a nursing home, and more than a quarter die in the year following the injury. Previous fall prevention studies have shown that a multi-disciplinary approach to preventing falls in the 65+ age group is the most effective way to reduce fall risks. Important elements include education and skill-building to increase knowledge about fall risk factors, exercise to improve strength and balance, and home modifications to reduce fall hazards.



### Falls Fact

Approximately 18% of EMS responses in King County are related to falls among persons 65 years and older.

## 1. Community Awareness Campaign - SHAPEUP 50+

### Background

Appropriately targeted exercise programs of sufficient intensity will increase and improve muscle strength, balance, and cardiovascular fitness in older persons. Exercises to improve strength and balance have therefore been central to most fall prevention programs.

### Program Description

The Shape-Up program provides a discount to older adults 50+ to participate in group physical activity classes at seven community/senior centers in King County, with the intent that older adults will continue to participate in other physical activity classes. To qualify, the centers must be located near senior public housing facilities that have a high incidence of 9-1-1 fall calls for older adults, and must currently offer a variety of older adult fitness programs and have room for more participants.



### Results

Since its inception, the Shape-Up program has enrolled 2,551 older adults (including 248 from Jan–May 2013). 50% to 75% of Shape-Up participants continue to take other physical activity classes. Barriers identified include participant transportation issues, the costs of taking additional classes, and centers having reached their maximum participant capacity.

### Next Steps

The EMS Division will convert this Strategic Initiative into an ongoing Regional Service and offer the program over the span of the 2014-2019 levy period. Future focus includes working to eliminate reduce the barriers that may prevent seniors from participating in the program.

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## STRATEGIC INITIATIVES, continued

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### 2. Fire Department Small Grant Program

#### Background

Approximately 18% of EMS responses in King County are fall related among persons 65 years and older. In 2009, over 2.2 million non-fatal fall injuries among older adults were treated in emergency departments. As “Baby Boomers” join the rank of 65+, it is assumed that EMS responses to this age group will increase.

#### Program Description

Fire departments face limited financial resources that restrict their ability to provide community programs for older adults. In response, the EMS Division provides fire departments an opportunity to apply for grant funds to address falls in this increasing aging population.

Grant requests must address at least two of the proven “best practices” for reducing fall risks: providing exercise opportunities; reviewing medications; offering vision checks; and mitigating home environmental hazard.

#### Objectives

- Engage an average of five to eight fire departments each year; and
- Reach community participation of 130 seniors ( as stated by fire department grant goals).

#### Results

- Since the program began in 2008, an average of five fire departments received grants each year to address falls in their community;
- In 2012, grant funds were provided to six fire departments, maintaining fire department participation levels as compared to 2011. Due to budget constraints, many fire departments reorganized staffing and were unable to participate; and
- In 2012, fall prevention programs were provided to 148 community residents.

#### Next Steps

The EMS Division will convert this Strategic Initiative into an ongoing Regional Service and offer the program over the span of the 2014-2019 levy period.

### 3. Expansion of the Fall Prevention One Step Ahead Program

#### Background

Older people fall because of a combination of risk factors. These risk factors include individual specific conditions, such as weak muscles and poor balance, decreased vision, complications of medication treatment, unsafe footwear, and weakness of the lower limbs. Fall risks also include environmental hazards, such as uneven or slippery walking surfaces, poor lighting, or the lack of wall bars in showers.

#### Program Description

The One Step Ahead fall prevention program offers adults 65 years and older a free home safety assessment to identify fall hazards, install fall prevention safety devices and offer education about staying safe in the home, along with other community resources. Those eligible must have called 9-1-1 for a fall incident in the past, received a “high risk” of fall assessment by a healthcare professional, or been referred by an emergency department (ED) or social worker (a pilot started with Highline and Evergreen hospitals in 2012).

#### 2013 Objectives

- Increase participant enrollment by 3%;
- Increase percentage of participants who did not have a fall after the intervention from 78% (in 2011) to 81%;
- Increase hospital ED participation to two other area hospitals.

#### Results

- The program has enrolled a total of 1,096 participants (86% experienced a fall prior to the intervention);
- 82% have not fallen after the intervention, an increase of 24% from the initial fall study conducted in 2003 (and above the 2013 objective level).

#### Next Steps

The EMS Division will convert this Strategic Initiative into an ongoing Regional Service and offer the program over the span of the 2014-2019 levy period. Focus includes increasing patient referrals via hospital emergency departments/social workers, and adding another Fall Intervention Specialist in 2016.



Fall Prevention Specialist Jean Corr (left) implements a fall prevention action plan.

### 4. Grant and Other Funding Opportunities

This Strategic Initiative was discontinued 2011 due to lack of revenue generation.

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## STRATEGIC INITIATIVES, continued

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### **SI: Public Access Defibrillation (PAD) Community Awareness Campaign**

#### **Background**

Every year, more than 300,000 Americans die from sudden cardiac arrest, a condition in which the heart unexpectedly stops beating. It can happen anywhere, to anyone, at any time - even to those with optimal heart health. And when it occurs, seconds count.

A key component to the system of care during cardiac arrest is early CPR and the application of an AED to restore proper heart rhythm. Studies have shown a 70-80% chance of survival if an Automated External Defibrillator (AED) is used within minutes on a victim of sudden cardiac arrest. For many, a shock from an AED is the only chance for survival. Bystanders can perform CPR and apply AEDs prior to EMT arrival, significantly increasing the chances of patient survival.

#### **Description**

Introduced nearly 30 years ago, AEDs administer an electrical shock to a sudden cardiac arrest victim's failing heart to restore a normal heart beat. They have been remarkably effective at saving lives, are reasonably priced, and are easy to use. Businesses in King County, however, are not purchasing AEDs nor are they registering their devices with the EMS Division as required by Washington state law.

The EMS Division engaged consultant Weber Shandwick to develop a comprehensive communications program – the Shockingly Simple – Restart a Heart Campaign – to increase awareness about AEDs and AED registration across the King County business community. Initial qualitative and quantitative research suggested that awareness of AEDs is relatively low among business leaders, as well as the general public. In addition, many businesses with AEDs do not know that registration is critical to save lives because it allows 9-1-1 emergency dispatchers to locate the nearest device. It became clear that in order to increase AED purchases and registration, it would be important to develop a local media outreach strategy, and to develop a “Toolkit” of materials that educate, address concerns, and guide individuals through the process.

#### **Campaign Objectives**

- To increase awareness of AEDs, specifically:
  - AEDs ease-of-use;
  - AEDs ability to provide a greater chance of saving a life; and
  - AED purchases as a business best practice.
- To increase purchases and registration of AEDS by businesses and large organizations throughout King County.

**SHOCKINGLYSIMPLE**  
— ECG — RESTART A HEART — ECG —

The target audience for the Shockingly Simple campaign includes King County business leaders and the general public with a focus on those with the greatest need for AEDs based on volume of people and range of influence, including:

- Large employers and their employees (including nonprofits and government entities);
- Retail (high-traffic); and
- Gyms and fitness facilities (high-traffic).

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## **Results/Evaluation**

### Engagement of Business and Government Leaders

Regional business and government leaders in the King County community were asked to serve as Sound Heart Heroes to educate others about purchasing and registering of AEDs.

### Media Outreach

Creative writing was the key to crafting a concise and informative and simple press release to engage media in the campaign. Using strategic, tested messaging, the press release educated readers on what sudden cardiac arrest is and how an AED can save a life, along with identifying key partners of the campaign and upcoming events.

To create a comprehensive toolkit, the team gathered information from existing materials within Public Health – Seattle & King County, pulled key messages from focus groups with medical and business experts, and leveraged the knowledge of the EMS Division/Public Health - Seattle & King County team to develop the following pieces:

- Campaign overview – Two-page overview with core messages and key statistics;
- The Shockingly Simple – Restart a Heart campaign tag - Identification for the campaign used on the website, handouts, and press materials;
- Frequently asked questions (FAQ) – Talking points addressing liability concerns;
- Implementation checklist – Steps to follow once an AED has been purchased;
- Communication toolkit – Sample e-mail, newsletter piece tweets to assist with internal and external communication with AED purchase; and
- Shockingly Simple – Restart a Heart Prezi Video – a visual piece to educate the public on sudden cardiac arrest and how AEDs can save lives. The piece ends with a call to action to purchase and register an AED. The Prezi was embedded into the Public Health – Seattle & King County and EMS Division home pages and it was used in media outreach, on Twitter, and on Facebook. It was featured during events such as the King County Health Fair, the Seattle Storm game and the Seattle Sounders FC campaign launch.

### Additional Public Outreach

- Seattle Sounders FC game sponsorship, including display booth and campaign signage during the game;
- A partnership with Nick of Time Foundation to promote AEDs at a Seattle Storm game; and
- Participation in a Maple Valley Community Emergency Preparedness Fair.

## **Campaign Results**

- 13 media stories;
- Eight stories in association newsletters;
- 550 Prezi views on Vimeo within the first 3 months of the campaign;
- Over 22,136 website views since campaign launch
  - Monthly average June 2012 - May 2013: 1,845 page views, with a high of 3,348 in June 2012
  - In comparison the number of page views January-May 2012 was 514 total

## STRATEGIC INITIATIVES, continued

- 256 new registrations from 70 different businesses, agencies and organizations since June 2012;

Registrations from large organizations include:

- Bill & Melinda Gates Foundation
- Woodland Park Zoo
- Timber Ridge at Talus
- Patagonia Seattle
- Sellen Construction
- AED Concierge

### Next Steps

The launch of the Shockingly Simple campaign generated momentum that will be carried forward through additional contact with the business community, development of a speakers bureau, and participation in public events related to health and safety. The focus of 2013 is on larger organizations, as well as health clubs and fitness centers in King County. Additional tools including a label to attach to AEDs which are registered, and a window cling which shows the public that an AED is present on site, have been developed.



The Shockingly Simple – Restart a Heart campaign will continue to seek media coverage, use social media, and develop partnerships to advocate for the purchase and registration of AEDs.

The Shockingly Simple Campaign has been converted to Regional Services and will be continued during the 2014–2019 EMS levy period.



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## **SI: Interactive Enhancements to EMS Online**

### **Background**

When the EMS Division recognized that EMS personnel needed an alternative method for completing the cognitive pieces of ongoing training and evaluation courses, it developed the EMS Online website. This interactive web-based teaching tool was originally intended to serve only a small number of EMS providers in King County and deliver only a limited number of courses. However, its offerings have expanded immensely due to its effectiveness in delivering quality training at a low cost, and users are now requesting additional content and expanded features.

### **Description**

The 2008-2013 Strategic Plan includes an initiative to develop additional content and expanded features to EMS Online over the span of the current levy period.



### **Objectives**

- Incorporate tools for training officers into the website;
- Produce new interactive case studies;
- Produce new courses;
- Design and develop six continuing medical education courses at the paramedic level;
- Incorporate interviews with experts into existing courses; and
- Create learning activities that track to the course outcomes.

### **Results**

In 2013, EMS Online's ALS and BLS courses were enhanced so that course content specifically meets targeted objectives and core competencies. A new course design provides EMTs and paramedics more opportunities to interact with the course material and includes practical simulation scenarios.

New this year was the launch of the second in a series of six paramedic courses. The courses were developed in conjunction with the University of Washington/Harborview Medical Center and topic specialists in the field. These courses include a combined ALS/BLS course in High Performance Trauma Management aimed to decrease on-scene time in trauma patients and facilitate efficient transfer of care from EMTs to paramedics. Following County, State and national paramedic educational requirements, the modules will focus on the following topics:

- High performance trauma training including tourniquet and bleeding control;
- Submersion care (drowning);
- Obstetric challenges;
- Palliative care (how to care for the terminally ill);
- Cardiac hardware (new medical devices used in patients in the community); and
- Post cardiac resuscitation care.

## STRATEGIC INITIATIVES, continued

### Next Steps

This Strategic Initiative is recommended to be converted into an ongoing Regional Service during the 2014-2019 levy and will focus on:

- Completing new courses at the paramedic level to EMS Online;
- Incorporating a video “Ask-the-Doc” posing questions from the field to the King County Medical Program Director;
- Delivering the EMT Patient Care Protocol book in mobile learning format (available for smart phones and tablet devices);
- Developing enhanced illustrations for courses;
- Adding new course framework with redesigned content delivery; and
- Incorporating science-based education format.



Students receive over 2,500 hours of intensive training through the Harborview Medical Center Paramedic Training Program.

Paramedics are required to complete 50 hours of yearly continuing medical education to maintain certification.



Emergency Medical Technicians (EMTs) receive over 140 hours of skills based training.

## SI: Systemwide Enhanced Network Design (SEND)

### Background

Complete, accurate, and timely information is integral to the management of all aspects of the Emergency Medical Service (EMS) system in King County. Creating a system that supports the collection of quality EMS data and allows rapid access to the data using an efficient system design is of great importance in delivering high quality emergency medical care to the residents of King County.

### Description

The Systemwide Enhanced Network Design (SEND) Strategic Initiative is a five-year project developed by the EMS Division in partnership with regional EMS agencies, hospitals and dispatch centers to enhance the existing EMS data network to improve the quality and timeliness of EMS data, thus improving patient care. Included in the Medic One/EMS 2008-2013 Strategic Plan, the SEND Project focuses on moving EMS agencies to fully electronic patient care records and building interfaces with hospitals.

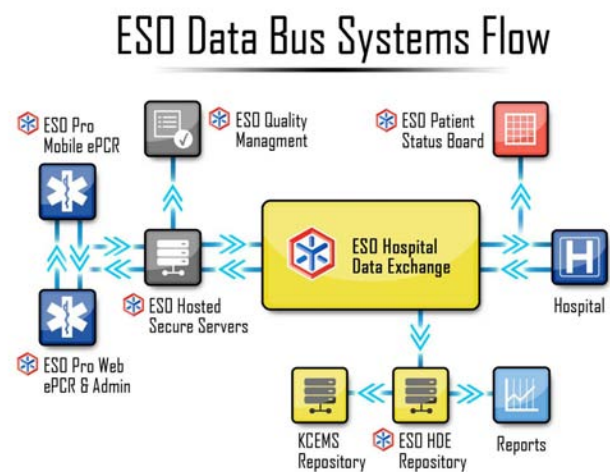
### Objectives

- 1) Communicate critical and timely patient information to hospitals prior to patient arrival at emergency departments (ex. chest pain patients requiring catheterization).
- 2) Improve access to complete and timely EMS patient data, especially patient outcomes, thus improving oversight of EMS protocols and procedures and enhancing patient care (ex. management of stroke patients).
- 3) Improve data processing, including fully automating uploads to the central repository, reducing administrative staff work and errors.

### Results

In the five years since the SEND Project was initiated, the EMS Division procured a data hub to automate the process of integrating EMS data and worked with EMS agencies and hospitals to build interfaces from their existing EMS data repositories to the data hub. The EMS Division also worked with EMS agencies and hospitals to facilitate the activation of electronic field data collection and transmission of critical information to emergency departments.

- COMPLETED all major project objectives and milestones under budget and on time.
- COMPLETED procurement and setup of data hub, and EMS records are now being processed. Improved access to EMS records from 87 days to 27 days.
- TRANSITIONED remaining EMS records from paper to electronic format, eliminating data entry staffing.



## STRATEGIC INITIATIVES, continued

- INITIATED tablet pilot, distributing 37 tablets to 15 EMS agencies.
- COMPLETED hospital interface with Evergreen Hospital and are expanding the model to other hospitals.

### Total SEND Project Budget and Expenditures

	Budget	Expenditures	Savings
<b>SI Funds</b>	\$986,691	\$838,909	\$147,782
<b>RSS Funds (staffing)</b>	\$766,757	\$184,738	\$582,019
<b>Total</b>	<b>\$1,753,448</b>	<b>\$1,023,647</b>	<b>\$729,801</b>

### Next Steps

- Continue encouraging electronic EMS records in the field at remaining EMS agencies.
- Complete hospital interfaces in remaining hospitals in King County.

## SI: All Hazards Management Preparation

The All Hazards Management Preparation Strategic Initiative was discontinued due to the duplication of local area efforts.

## SI: EMS Efficiencies & Evaluation Studies

The following five projects fall under this Strategic Initiative heading:

1. Community Medical Technician (CMT)
2. Taxi Transport Voucher (TTV) Project
3. EMS Vehicle Replacement Policies
4. Scanning of Paper Records
5. Performance Measures Development

### Background

The emphasis behind all Strategic Initiatives is to improve EMS patient care, manage the growth in paramedic services, and develop system efficiencies and cost savings/avoidance. This Strategic Initiative provides additional funding to further pursue areas showing a potential for additional efficiencies and for reviewing the existing system.

### 1. Community Medical Technician (CMT)

Funds from the Efficiencies & Evaluation Strategic Initiative supported two separate CMT pilot projects to evaluate an alternative EMS response model to lower acuity calls. Specifics about this project can be found on p. 43 of this report.



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## **2. Taxi Transport Voucher (TTV) Project**

The EMS Division completed a Taxi Transport Voucher pilot project in 2011. This program provides low cost taxi cab vouchers to lower acuity patients. Project results were presented in the 2012 Annual Report.

## **3. EMS Vehicle Replacement Policies**

ALS vehicles are currently scheduled to be replaced at six-year intervals. However, in practice, the schedules vary among ALS agencies, with some using the six-year interval, and others averaging 10 years. The King County Auditor's Office recommended conducting an ALS vehicle life cycle cost analysis to optimize vehicle replacement cycles and subsequently lower costs.

During the recent 2014-2019 levy planning process, an ALS vehicle life-cycle assessment was identified as a possible approach to refine ALS unit and agencies costs. ALS agencies agreed to expand the vehicle replacement cycle to eight years during the next levy span and evaluate whether they can all safely expand to ten years, as some ALS agencies have succeeded in doing.

## **4. Scanning of Paper Records**

In collaboration with King County's effort to move to electronic record retention, the EMS Division recommitted to converting paper records to scanned images for purposes of improved storage and access of documents. In addition, the EMS Division record retention schedule was updated to reflect current practices in document usage.

## **5. Performance Measures Development**

In response to King County Auditor's Office recommendations and the regional EMS Levy Planning Task Force, the EMS Division hosted several meetings in early 2013 to develop regional performance measures for emergency medical services in King County. Facilitated by Michael Jacobson, King County's Performance and Strategy Deputy Director, regional stakeholders and partners identified a set of priority performance measures that cut across each major area of EMS business. These system measurements will be included in future editions of the annual report.

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## STRATEGIC INITIATIVES, continued

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### **SI: Strategic Planning for the Next Levy Period**

#### **Background**

The Medic One/EMS system of King County is funded with a six-year EMS levy that expires on December 31, 2013. To continue providing this vital service in 2014 and beyond, a new Strategic Plan, defining the roles, responsibilities and programs provided by the system, and a levy rate to fund these services needed to be developed. In order to allow for a seamless transition into the next levy span, it was anticipated that the EMS levy reauthorization would be placed before the voters in 2013.

#### **Description**

The EMS Advisory Task Force was created by King County Ordinance to “ensure continued emergency medical services for King County by reviewing issues and options and by developing recommendations for the next Strategic Plan.” For over nine months, the Task Force, staffed by the EMS Division, worked collaboratively with nearly 100 Stakeholders from all parts of the EMS system to develop the future direction and basis for the next Medic One/EMS levy.



Meeting of the EMS Advisory Task Force in May 2012.

The Task Force formed four subcommittees to complete the bulk of the program and cost analyses. Committed to ensuring sufficient time for study, discussion and agreement, the subcommittees met a total of 23 times over seven months, and generated recommendations that subsequently came to the Task Force for approval. On July 26, 2012, the Task Force endorsed its Programmatic Needs Recommendations.

The King County Executive transmitted the Medic One/EMS 2014-2019 Strategic Plan, based directly on the Task Force Recommendations, and a levy rate of 33.5 cents to the King County Council for discussion and deliberation. The Plan was amended by the Regional Policy Committee in April 2013, but the changes did not modify the 33.5-cent levy rate. City Councils for those cities with over 50,000 in population confirmed their support for the levy proposal, as required by state law, and on June 3, 2013, the King County Council passed an Ordinance formally placing the 33.5-cent EMS levy before the voters in November 2013.

## Objectives

- Maintain the Medic One/EMS system of King County as an adequately funded, regional tiered system that reflects the existing successful medical model, and continues to provide state of the art science-based strategies, programs and leadership;
- Recognize individual jurisdictions' needs for local autonomy to meet their communities' expectations and Medic One/EMS services; and
- Develop regional consensus for the programs and policies needed to maintain the integrity of the successful Medic One/EMS system of King County over the 2014-2019 levy span.



Collaboration was the key element in development of the Medic One/EMS 2014-2019 levy package.

## Results

A Medic One/EMS levy is expected to be placed on the November 5, 2013 ballot. The 33.5-cent levy rate ensures the integrity of the world-class Medic One/EMS system is preserved for all residents of, and visitors to, King County by:

- Maintaining the existing number of medic units and not adding any new units over the span of the next levy period;
- Fully funding eligible Advanced Life Support (referred to as ALS or paramedic) costs;
- Continuing the contribution to support Basic Life Support (referred to as BLS or “first responders”);
- Developing programs to address BLS demand and support BLS’s role in regional decision-making;
- Continuing programs that provide essential support to the system and encourage efficiencies, innovation, and leadership;
- Implementing conservative financial policies and procedures that lend to financial stability; and
- Funding responsible level of reserves for unanticipated costs.

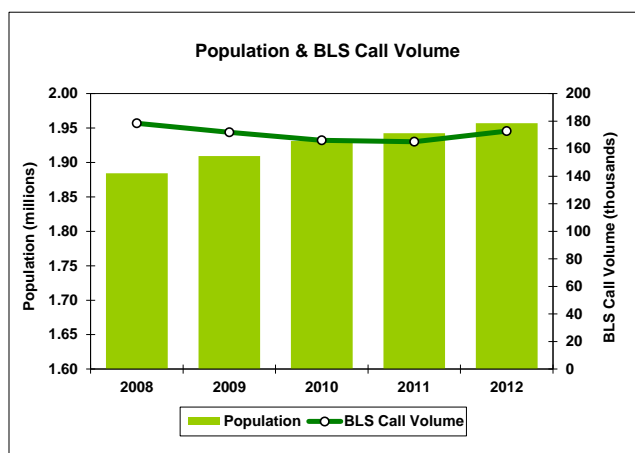
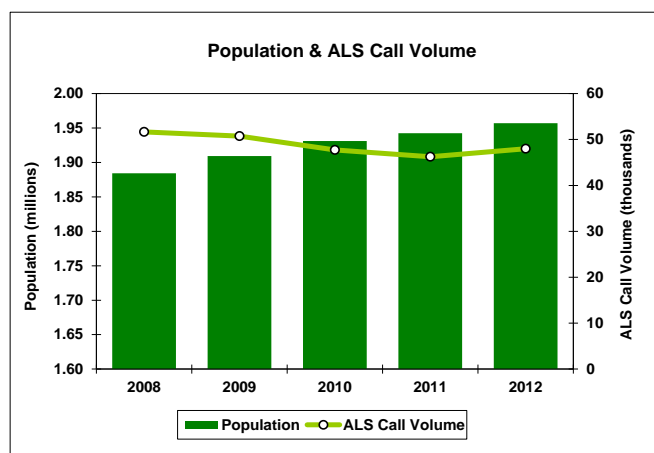
The Medic One/EMS 2014-2019 Strategic Plan can be found online at <http://www.kingcounty.gov/healthservices/health/ems.aspx>

# Summary of 2012 EMS Statistics (Seattle and King County)\*

The following statistics are derived from the patient care reports collected and submitted by EMS agencies to the EMS Division for the year 2012.

Population	Seattle-King County	% Growth (Annualized)
1980	1,269,898	
1990	1,507,305	1.87%
2000	1,737,034	1.52%
2010	1,931,249	1.12%
2012	1,969,722	0.67%

The rate of population growth in King County continues to decline. Population has historically been strongly correlated to EMS growth, and in 2012, data showed a reversal in ALS call volume decline after a three year decline. BLS is also following the same pattern following a two year call volume decline. The two graphs below depict the population growth relative to both ALS and BLS call volume patterns. Note that the scales for population and call volumes are different in the tables below.

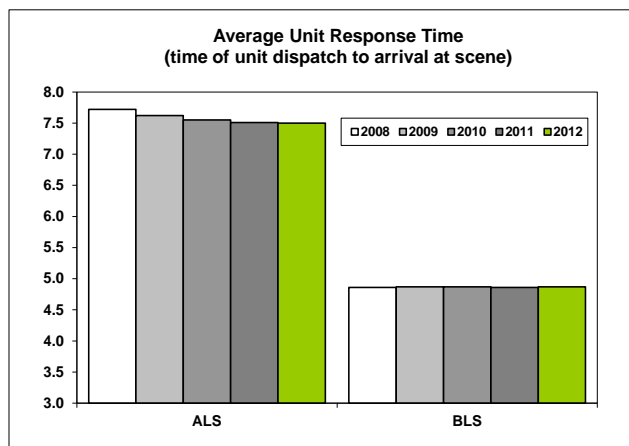


\*EMS data uses a fully integrated EMS Division and Seattle dataset. Response times are defined as follows:

**Total** - the time of call received at dispatch center to the time of arrival at the scene

**Unit** - the time of unit dispatch to time of arrival at the scene.

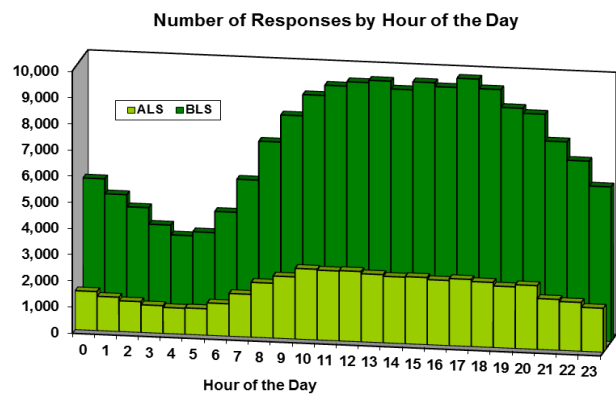
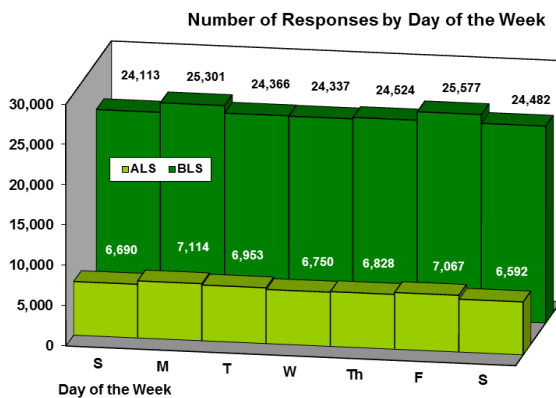
In some instances, totals differ due to missing values.



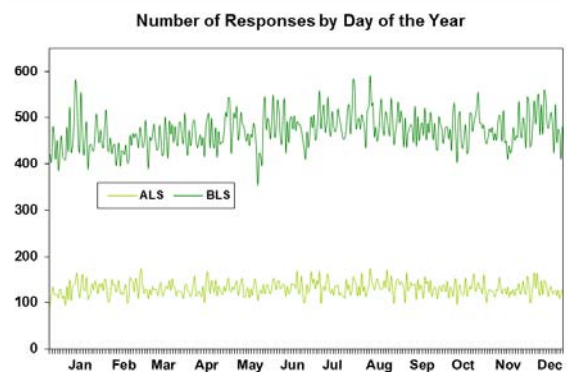
# Characteristics of Responses

## Operations

Service	ALS		BLS	
<b>Number of Responses</b>	48,010		172,700	
<b>Average Response Time</b>	<b>Total RT</b>	<b>Unit RT</b>	<b>Total RT</b>	<b>Unit RT</b>
	11.4	7.5	5.8	4.9
<b>6 minutes or less</b>			65.3%	77.0%
<b>8 minutes or less</b>	38.8%	64.9%		
<b>10 minutes or less</b>	55.7%	81.2%		
<b>12 minutes or less</b>	67.3%	90.0%		
<b>14 minutes or less</b>	75.3%	94.5%		
<b>Cancelled Enroute Calls</b>	8,170 (17.0%)		5,582 (3.2%)	



The average BLS unit response time has remained the same despite the almost 4.9% increase in call volume, indicating some capacity to manage additional calls. Average ALS response times also follow the same pattern in light of a 6.1% increase. The three graphs located above and to the right reflect the patterns of ALS and BLS response during the day, the week, and throughout the year. There remains a notable difference in range of BLS responses per day over time (~350-580 calls) in comparison to ALS responses (~95-175 calls).

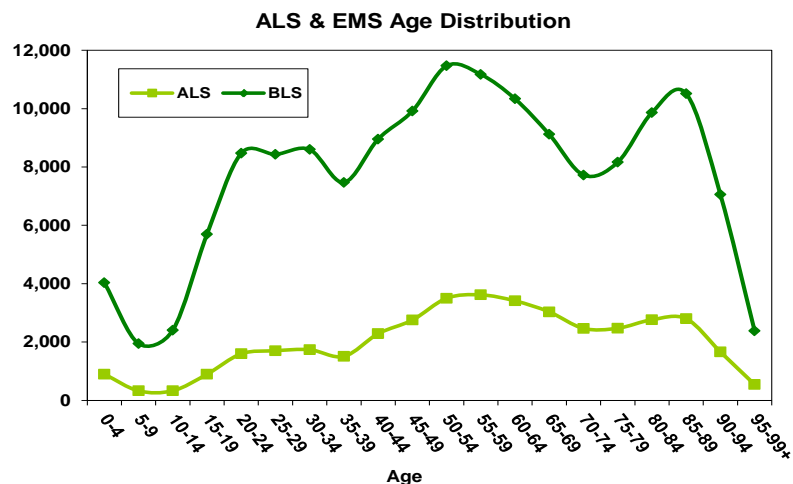


## Characteristics of Responses, continued

The following information reflects a variety of statistics that characterize the types of both BLS and ALS calls, including a comparison of age groups, types of medical complaints, where incidents take place, and patient transport information. Paramedics providing advanced life support are more likely to attend to older patients for cardiac conditions, while EMTs often attend to trauma in young adults.

### Responses by Age Group

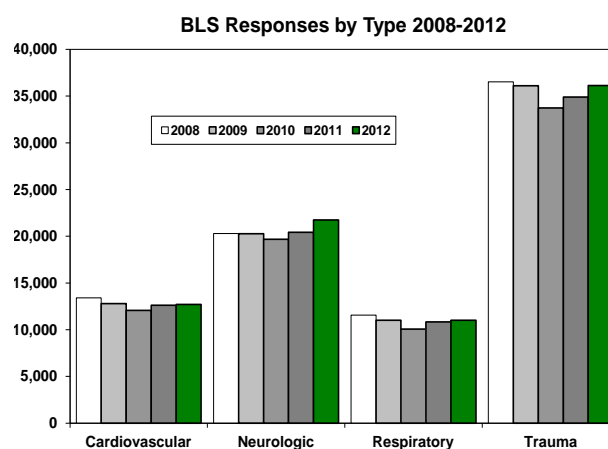
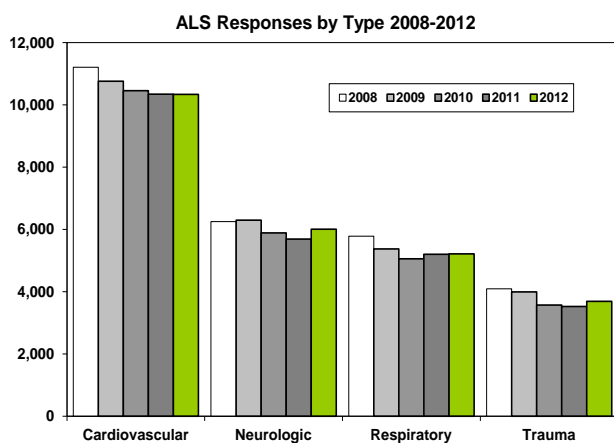
	ALS	BLS
<b>0-4 yrs</b>	900 (2.2%)	4,035 (2.8%)
<b>5-9 yrs</b>	329 (0.8%)	1,945 (1.3%)
<b>10-17 yrs</b>	760 (1.9%)	5,336 (3.5%)
<b>18-24 yrs</b>	2,064 (5.1%)	11,239 (7.3%)
<b>25-44 yrs</b>	7,238 (18.0%)	33,460 (21.8%)
<b>45-64 yrs</b>	13,281 (32.9%)	42,890 (27.9%)
<b>65-84 yrs</b>	10,739 (26.6%)	34,870 (22.7%)
<b>85+ yrs</b>	5,003 (12.4%)	19,944 (13.0%)
<b>Total</b>	<b>40,314</b>	<b>153,719</b>



Although ALS and BLS personnel each respond more frequently to particular types of calls (i.e. cardiac calls for ALS and trauma for BLS), the EMS community serves a wide variety of medical emergencies. This requires not only an in-depth knowledge of specific invasive medical procedures but also requires a considerable breadth of knowledge and skills for diagnoses and management.

### Responses by Medical Type

	ALS	BLS
Cardiovascular	10,335 (26.2%)	12,701 (8.9%)
Neurologic	6,007 (15.2%)	21,740 (15.2%)
Respiratory	5,211 (13.2%)	11,007 (7.7%)
Trauma	3,694 (9.5%)	36,129 (25.3%)
Abdominal/Genito-Urinary	2,019 (5.1%)	11,931 (8.4%)
Alcohol/Drug	1,989 (5.0%)	7,988 (5.6%)
Metabolic/Endocrine	1,510 (3.8%)	3,539 (2.5%)
Psychiatric	1,357 (3.5%)	8,205 (5.8%)
Anaphylaxis/Allergy	407 (1.0%)	1,151 (0.8%)
Obstetric/Gynecological	387 (1.0%)	1,094 (0.8%)
Other Illness	6,449 (15.8%)	27,112 (19.0%)
<b>Total Medical</b>	<b>39,354</b>	<b>142,597</b>



## Public Health Highlight: An Assessment of the System of Care

### What is a STEMI?

Acute myocardial infarction (AMI), commonly known as a heart attack, results from a sudden, unexpected reduction of blood flow through an artery inside the heart. The most severe type of heart attack—called ST- Elevation Myocardial Infarction (STEMI)—occurs when a coronary artery becomes completely blocked, in essence starving heart muscle of oxygen and nutrients. Unless the blood flow is restored quickly, patients could face permanent heart damage, or worse, death. The rapid and effective restoration of arterial blood flow—i.e. reperfusion—relies not only on the patient recognizing the symptoms and seeking emergency medical treatment, but also on a coordinated system of care designed to best respond to such a patient.

### What Constitutes a STEMI System of Care?

An effective STEMI system of care relies on the seamless coordination between the 9-1-1 dispatch center, Emergency Medical Services (EMS) agencies, and hospital(s) capable of treating a STEMI patient. The overall goal of a STEMI system is to provide life-saving treatment within 120 minutes of the patient's onset of symptoms. According to national guidelines, the preferred method of reperfusion is primary percutaneous coronary intervention (PCI) at a PCI-capable hospital<sup>1</sup>. EMS can play a critical role in this system by providing:

1. Early recognition of STEMI using a 12-lead electrocardiogram (ECG) for any suspected AMI patients;
2. Rapid transport specifically to the closest PCI-capable hospital; and
3. Early activation of the STEMI alert system, which allows hospitals to prepare the catheterization lab for the arrival of the patient.

STEMI patients that utilize the 9-1-1 system (as opposed to private transportation) have been shown to have shorter treatment times and better health outcomes. Various performance metrics may be used to evaluate the effectiveness of any given STEMI system of care, and thus it is important to employ processes for data collection, analysis, and feedback to both hospitals and EMS agencies.

### What is the CHASE Program?

Since its inception in 2008, the Comprehensive Heart Attack Surveillance and Evaluation (CHASE) program has worked to assess and improve the overall STEMI system of care in King County, and more specifically, the role that EMS plays within that system. The goal of CHASE is to ensure the optimal treatment for any individual that suffers a heart attack in King County, regardless of where that heart attack occurred. The CHASE program falls within the EMS Medical Quality Improvement (QI) section (see p. 13 for further details).

The CHASE program allows King County to meet the requirements of RCW 70.168.150, mandating a state-wide Emergency Cardiac and Stroke (ECS) System of Care. The EMS Division continues to collaborate with the Washington State Department of Health's ECS Technical Advisory Committee by providing data analysis for performance measures to meet ECS-recommended system goals (see <http://www.doh.wa.gov/ECS> for further information).

1. O'Gara PT, Kushner FG, Ascheim DD, et al. 2013 ACCF/AHA Guideline for the Management of ST-Elevation Myocardial Infarction: Executive Summary: A Report of the American College of Cardiology Foundation/American Heart Association Task Force on Practice Guidelines. *Circulation*. 2013; 127:529-555.

## for STEMI Heart Attack Patients in King County

### Methods

Prior to 2012, the CHASE program focused on characterizing STEMI patients in King County through a comprehensive review of all EMS cases with initial presentation of suspected AMI or STEMI. In 2012, improvements were made by successfully linking a sample of known STEMI patients that received PCI at one of three local hospitals, to those that were transported by EMS agencies in King County. The goal of the 2012 performance analysis was to evaluate the demographics, pre-hospital and hospital response times, and health outcomes of STEMI patients that received PCI and were transported.

### Results

A sample of three King County hospitals reported 233 STEMI patients who were admitted through the emergency department from January to December 2012. Of those patients, 151 linked to King County patient records. These 151 cases were analyzed for performance metrics related to STEMI systems of care. Of those cases, 76% were male, and the median age was 64 years. 73% of patients had an initial EMS classification as AMI-STEMI. Hospital discharge status indicated that 93% of patients were alive upon discharge, and 7% were deceased. Below is a chart containing relevant time measures in the transport of these patients in King County, along with Washington state and national time goals.

STEMI Performance Metrics/Median Times	King County in 2012	WA State/AHA/ACCF Rec.*
Symptom Onset to Definitive Treatment - Balloon Time	Insufficient data	Goal: <120 minutes
9-1-1 Call to First Unit Arrival - Response Time	5 minutes (n=112)	
First Unit Arrival to Start of Patient Transport - On Scene Time	23 minutes (n=114)	Goal: <15 minutes
9-1-1 Call to Hospital Arrival	39 minutes (n=112)	
9-1-1 Call to Needle-In Time	77 minutes (n=118)	
9-1-1 Call to Balloon Inflation	95 minutes (n=114)	Goal: <90 minutes
*AHA = American Heart Association; ACCF = American College of Cardiology Foundation		

### Conclusions

This data represents the first successful linkage between local hospital records and EMS data, thus a first snapshot of the continuum of care from the 9-1-1 call until life-saving treatment (i.e. “Balloon Inflation”). EMS is close to meeting the Washington state and national recommendations for “On Scene” time of less than 15 minutes and 9-1-1-to-Balloon time of less than 90 minutes. Although these performance times have gotten better since 2011 analysis, there is still room for further improvement. Feedback on 2012 summary data has been provided to all local King County stakeholders and processes for enhancement have already been initiated.

### CHASE Target Goals for 2013 and Beyond

The Comprehensive Heart Attack Surveillance and Evaluation (CHASE) program in King County continues to provide valuable feedback to EMS agencies, hospitals, and local healthcare providers in regard to the treatment of STEMI patients. In 2012, hospital and EMS records were successfully linked to provide a snapshot of King County’s overall STEMI system of care. In 2013 and beyond, EMS will aim to expand the number of EMS-to-hospital data linkages so that we may further improve the efficiency and performance times between a patient’s onset of symptoms and final life-saving treatment. Overall, with the help of CHASE, the EMS system remains dedicated to providing the best quality care for heart attack patients in King County.

## Characteristics of Responses, continued

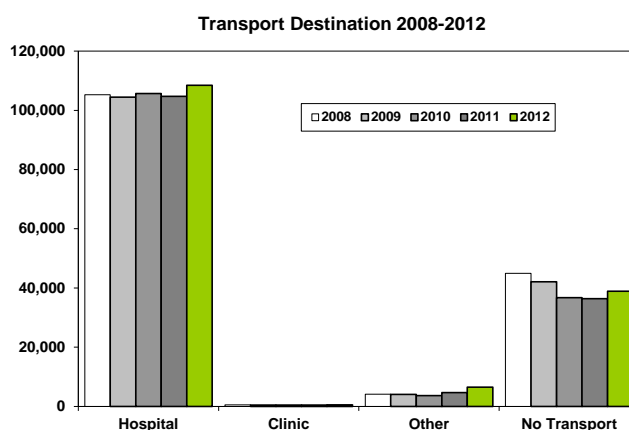
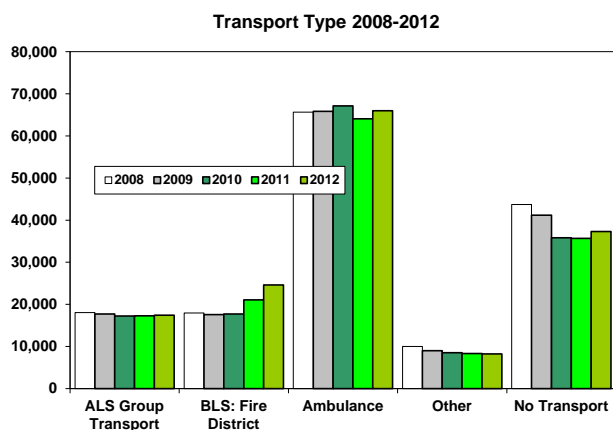
### Incident Locations

Similar to the variation reflected in the types of responses EMS agencies provide, EMS personnel respond to a variety of physical settings, again requiring a versatility of skills. For example, providers may respond to settings where they need to interact with other medical professionals or need to deliver patient care on a busy street or highway. Alternatively, EMS personnel respond to public settings where they may need to not only deal with the patient but also the public. This response sometimes requires cooperation and collaboration with other public safety personnel such as police officers and security guards.

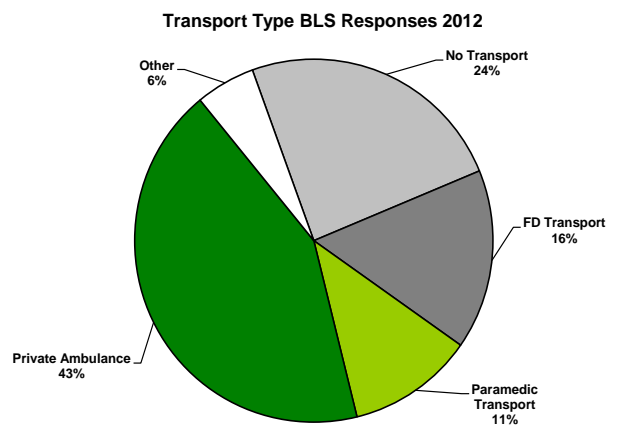
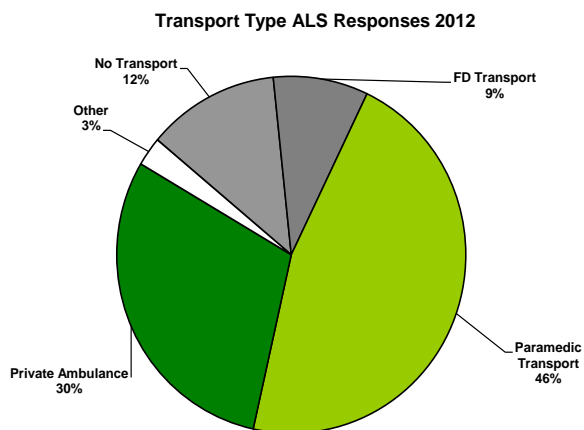
Incident Locations	ALS	BLS
<b>Home/Residence</b>	24,248 (57.8%)	82,945 (55.0%)
<b>Nursing Home/Adult Family Home</b>	3,297 (7.9%)	11,684 (7.7%)
<b>Clinic/MD Office</b>	2,204 (5.3%)	3,844 (2.6%)
<b>Other/Unknown Location</b>	12,101 (29.0%)	52,408 (34.8%)
<b>Total</b>	<b>41,850</b>	<b>150,881</b>

### Transport Type and Destinations

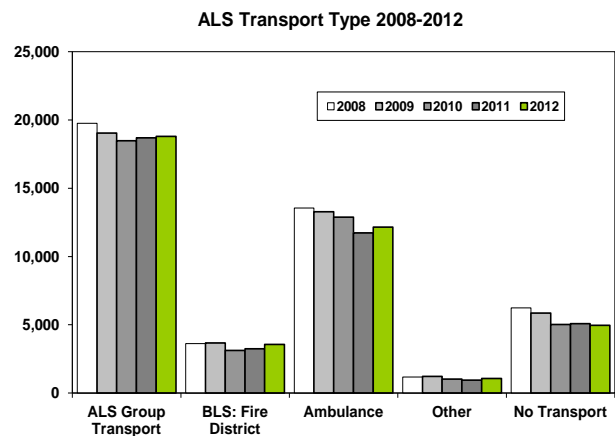
An important component of providing EMS care is appropriate triage. EMS personnel use their skills and knowledge to match the clinical need of the patient with the most appropriate transport and destination plan. The figures below reflect the transport trends over the past five years.



Transport Type		Transport Destination	
ALS Transport	17,388 (11.3%)		
ALS Air	59 (0.0%)	Hospital	108,445 (70.2%)
BLS - Fire District	24,614 (16.0%)	Clinic	536 (0.4%)
BLS - Ambulance	65,978 (43.0%)	Other	6,507 (4.2%)
Other	8,246 (5.4%)	No Transport	38,890 (25.2%)
No Transport	37,297 (24.3%)		
<b>Total</b>	<b>153,582</b>	<b>Total</b>	<b>154,378</b>



ALS Transport Type	
ALS Transport	18,730 (46.2%)
ALS Air	62 (0.2%)
BLS - Fire District	3,563 (8.8%)
BLS - Ambulance	12,150 (30.0%)
Other	1,062 (2.6%)
No Transport	4,959 (12.2%)
<b>Total</b>	<b>40,526</b>



# Cardiac Arrest Statistics

Seattle and King County have compiled cardiac arrest statistics for over 40 years. The following are data from the combined registries. A cardiac arrest is defined as a pulseless, breathless state for which cardiopulmonary resuscitation (CPR) is required. The data reflect EMS-treated cardiac arrests for patient 2 years of age and older due to all causes except trauma. Survival is defined as discharge from the hospital alive.

## Total Number of Cardiac Arrests for which resuscitation was attempted:

Year	2008	2009	2010	2011	2012
Cardiac arrests	1,046	1,072	1,069	1,047	1,134

For **2012**, the following table shows survival to hospital discharge based on arrest before or after arrival of EMS personnel and initially monitored cardiac arrest rhythm:

	# Treated	# Survived to Hospital Discharge	% Survival
<b>Arrest before arrival of EMS:</b>	<b>983</b>	<b>201</b>	<b>20%</b>
Ventricular fibrillation/tachycardia (VF/VT)	277	131	47%
Asystole	375	13	3%
PEA	287	46	16%
Not shockable, but unknown if PEA or asystole	36	5	14%
Unknown	8	6	75%
<b>Arrest after arrival of EMS:</b>	<b>151</b>	<b>51</b>	<b>34%</b>
VF/VT	26	20	77%
Asystole	16	5	31%
PEA	106	25	24%
Not shockable, but unknown if PEA or asystole	1	0	0%
Unknown	2	1	50%
<b>Total:</b>	<b>1,134</b>	<b>252</b>	<b>22%</b>

**Ventricular Fibrillation (VF):** Survival is highest among patients with a rhythm of VF/VT and is commonly reported on a subset of VF/VT patients whose arrests are witnessed, prior to EMS arrival, and due to underlying heart disease. The following is a one-year and a five-year summary:

Year	Rate
<b>2012</b>	110/193 (57%)
<b>2008-2012</b>	486/935 (52%)

## CPR initiated by Bystanders (all cases of CPR):

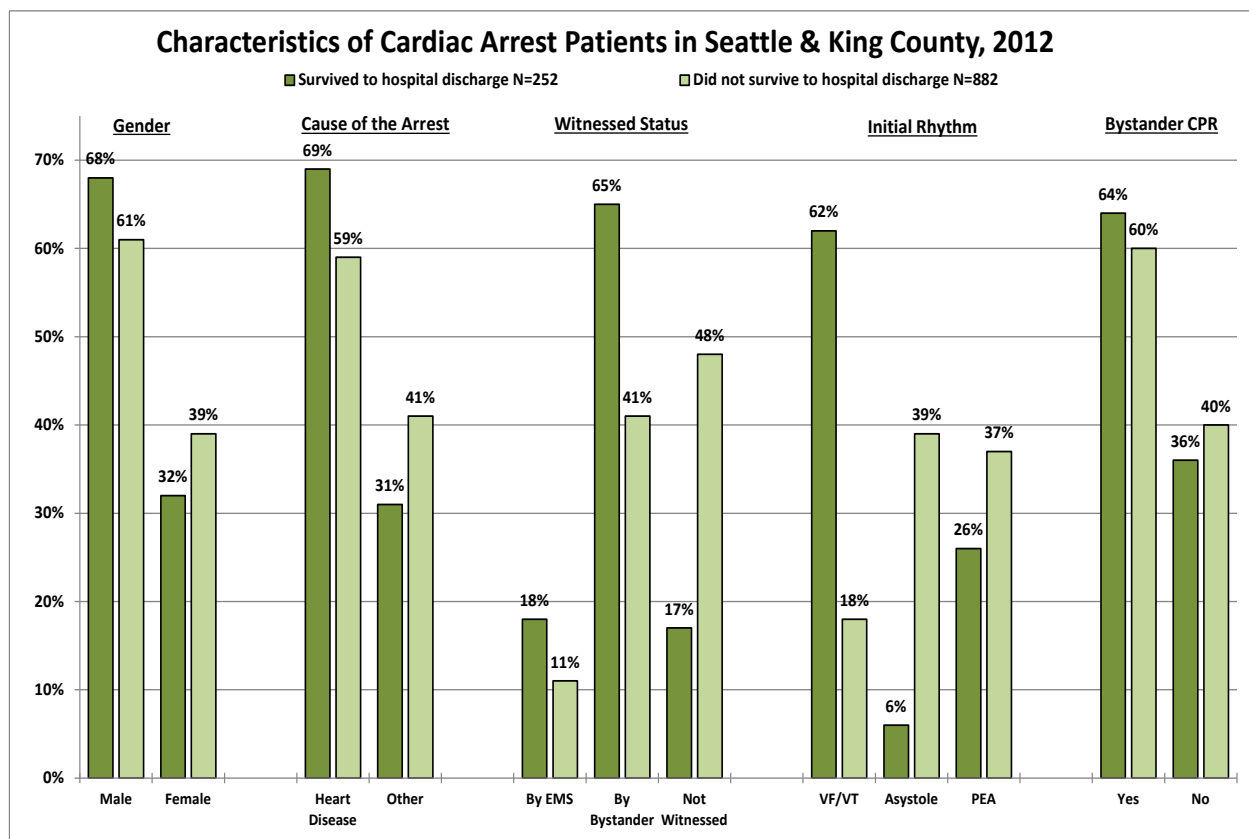
Year	Rate
<b>2008</b>	543/945 (57%)
<b>2009</b>	531/934 (57%)
<b>2010</b>	520/946 (55%)
<b>2011</b>	498/919 (54%)
<b>2012</b>	648/983 (66%)*

\*Note: in 2012, King County began reporting this statistic based on review of the dispatch recording, which accounts for the increase compared to previous years.

## Cardiac Arrest Highlight: A Year of Saving Lives

King County has one of the highest reported survival rates from out-of-hospital cardiac arrest in the world. For patients with bystander-witnessed arrests due to heart disease and with a collapsing rhythm of ventricular fibrillation, 57% survived to hospital discharge in 2012. Considering all EMS-treated out-of-hospital cardiac arrests, 22% of patients survived. This represents 252 King County residents who left the hospital, thanks in large part to the world-class EMS treatment they received.

Below is a chart that shows the characteristics of cardiac arrest survivors compared to those who did not survive to hospital discharge. Most survivors were male, had a bystander-witnessed arrest due to heart disease with an initial rhythm of ventricular fibrillation or ventricular tachycardia and received bystander CPR. Not shown in the graph is that the average age for survivors was 58 (compared to 65 for non-survivors) and that the average EMS response time was five minutes. Also not shown in the graph is that bystanders initiated chest compressions after receiving instructions from 9-1-1 telecommunicators in 50% of the cases where a survivor received bystander CPR.



Researchers in Seattle and King County have been studying factors that lead to improved survival for over 30 years. Past improvements stemming from this research have included limiting chest compression pauses during CPR and changes to defibrillator protocols. Future efforts will focus on the potential benefits of active cooling of cardiac arrest patients, ensuring high performance CPR (limited pauses and adequate compression depth) is provided to all patients and getting feedback on resuscitation performance back to providers in a timely manner, all with the goal of further increasing the percent of patients who survive an out-of-hospital cardiac arrest.

# EMS FUNDING AND 2013 FINANCIAL PLAN

## OVERVIEW: EMS Levy Structure

*The EMS levy is a regular property tax levy, subject to the limitations contained in Chapter 84.55.010 RCW. Levy funds are restricted by RCW and can only be spent on EMS-related activities. The levy growth is limited to a 1% increase for existing properties, plus assessment on new construction.*

*EMS levy funds are collected throughout King County and managed by the EMS Division for the region, based on RCW 84.52.069 Emergency Medical Care and Service levies, and policy guidelines outlined in the 2008- 2013 Medic One/ EMS Strategic Plan. King County EMS funds are spent on four main areas: Advanced Life Support (ALS), Basic Life Support (BLS), Regional Support Services, and Strategic Initiatives.*

*King County and the City of Seattle have an inter-local agreement stating that EMS levy funds collected within Seattle go directly to, and are managed separately by, the City. This section pertains only to the EMS fund within the remainder of King County (referred to as the KC EMS Fund), and excludes the City of Seattle.*

The following section focuses on the KC EMS Fund. Information on grants, donations, and entrepreneurial projects included in the Public Health Fund is included at the end of this section. Since this is the final year of the levy, this report focuses not only on 2012 actuals and 2013 budget and projections, but also the overall 2008-2013 levy period.

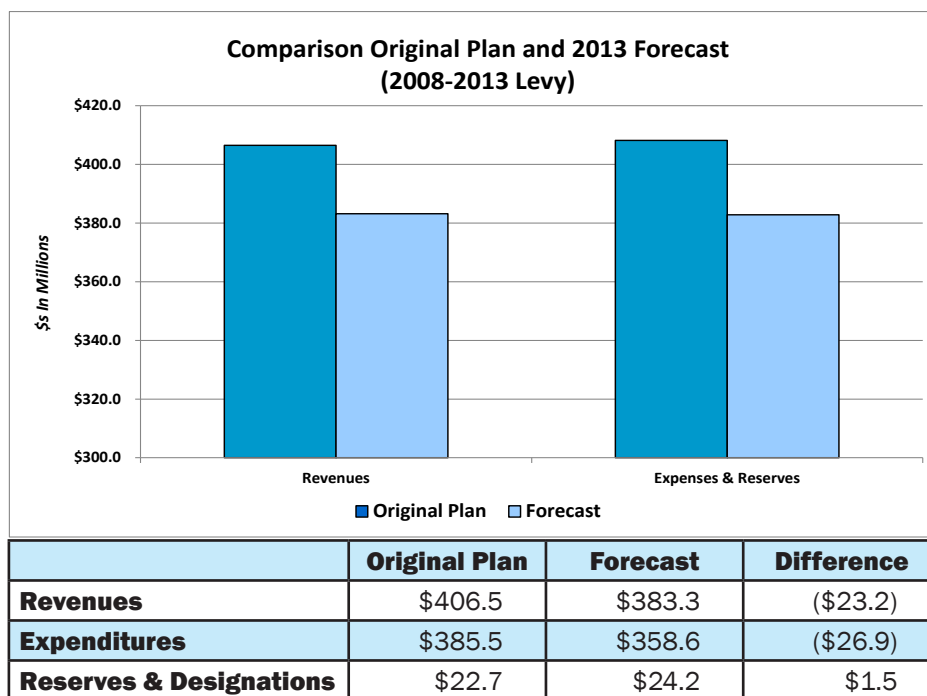
## Introduction

One key challenge the region faced financially during the 2008-2013 EMS levy period was the large drop in Assessed Valuations (AV) not envisioned when the levy was planned in 2006. For the first time in the history of the levy, actual funds raised by property taxes decreased over the six year levy period. To address this significant change, the region collaboratively developed several strategies to effectively lower expenditures without negatively impacting key services and outcomes. These included:

- Realigning resources to promote efficiencies and provide value to EMS partners;
- Continuing to manage use of resources – particularly ALS and BLS call volumes;
- Developing reserves and designations to cover ALS costs as recommended by King County Auditor's Office;
- Using reserves prudently;
- Reviewing operational and business practices for efficiencies with a focus on reducing expenditures; and
- Eliminating the addition of two planned 12-hour medic units in 2012 and 2013.

These strategies allowed for system efficiencies that resulted in expenditures currently forecast at \$27 million less than originally planned, offsetting revenues projected at \$23 million less than originally planned. In addition to managing expenditures to reduce revenue levels, the region stretched itself to save funds, thereby reducing the initial rate for the Medic One/EMS 2014-2019 levy.

The following chart and table compare the originally planned revenues and expenditures to the 2013 forecast for the 2008-2013 levy period. It shows reductions in both revenues and expenditures while reserve levels were slightly increased.



## 1. Revenues

The primary revenue supporting the KC EMS Fund comes from property taxes, although miscellaneous income, interest earnings, and fees for reimbursable services contribute a small amount to the fund.

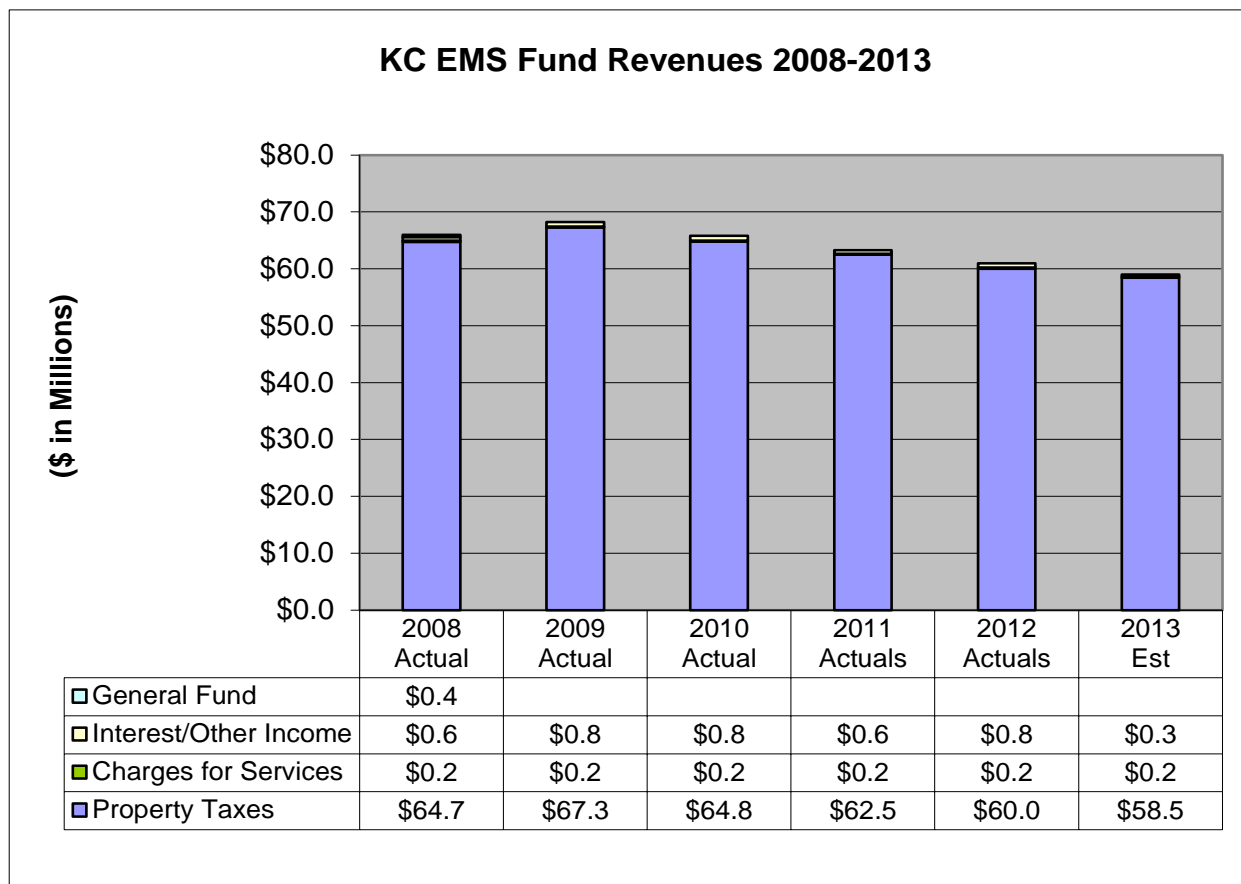
EMS Revenues (KC EMS Fund)		
	2012 Actual	2013 Budget
Property Taxes	98.42%	99.10%
Charges for Services	0.31%	0.32%
Interest and other Miscellaneous	1.27%	0.58%
Total	100.00%	100.00%

## EMS FUNDING AND 2013 FINANCIAL PLAN, continued

2012 Revenues for the KC EMS Fund, excluding the City of Seattle, were \$61 million; 2013 Forecast Revenues for the KC EMS Fund, excluding the City of Seattle, are \$59 million. This 3% decrease in revenues corresponds to a 3% decrease in assessed values between 2012 and 2013.

The 2008-2013 EMS Financial Plan was developed in 2006 and 2007. Consistent with forecasts from that time period, it did not anticipate the current economic downturn and, therefore, did not assume any decreases in AV. Instead, it assumed modest growth in property values and a one-percent limit on revenues from existing properties. The economic downturn has resulted in 2013 AV at 10% less than 2008 AV. Assessed values are forecast to return to 2008 levels by 2016.

The chart below shows the decline in actual and forecast revenues; property taxes have decreased due to lowered AV.



The original levy financial plan assumed a stable division of levy revenues between the KC EMS Fund and the City of Seattle, based on the proportional distribution of assessed valuation (35.6% City of Seattle and 64.4% KC EMS Fund). Beginning in 2010, the division of revenues between the City of Seattle and KC EMS Fund began changing. The estimated KC EMS Fund proportion of the levy has reduced from 64.5% in 2008 to 62.9% in 2013. The following chart shows the forecast distribution of property taxes between the KC EMS Fund and the City of Seattle.

<b>Division of Assessment</b>	<b>2012</b>	<b>2013</b>
KC EMS Fund	\$59,637,469	\$57,642,960
City of Seattle	\$34,678,677	\$33,999,266
<b>Total</b>	<b>\$94,316,146</b>	<b>\$91,642,226</b>
<b>% of King County</b>	<b>63.2%</b>	<b>62.9%</b>

Discussions with analysts attribute part of this change to greater reductions in AV for residential than commercial properties (with Seattle having a larger percentage of commercial properties than the area covered by the KC EMS Fund).

## 2. Expenditures

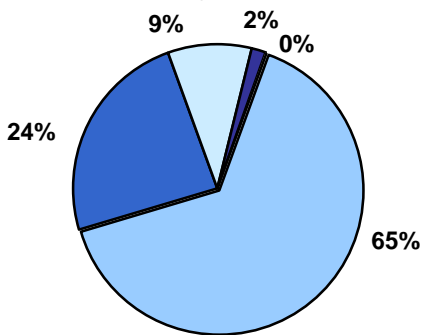
EMS levy revenues support four major EMS activities related to direct service delivery or support programs:

- Advanced Life Support (ALS) Services:
  - Receives over 60% of EMS funds
  - Uses a compound inflator that considers the different inflators for labor, pharmaceuticals, equipment and benefits
  - Uses a standard unit cost allocation consisting of an operating and equipment allocation
  - Eligible for use of reserves
- Basic Life Support (BLS) Services:
  - Receives approximately 24% of EMS funds
  - Uses a July-to-June CPI inflator
  - Distributed to individual agencies based on an allocation that includes the assessed valuation of the district and demand for services (call volume)
- Regional Support Programs:
  - Spends approximately 9% of EMS funds
  - Uses CPI inflator
- Strategic Initiatives:
  - Funded with lifetime budgets
  - Budgeted amount by year is adjusted to reflect changing cash flows based on project needs (2-3% of EMS funds)

## EMS FUNDING AND 2013 FINANCIAL PLAN, continued

The following charts and tables reflect the 2012 actual expenditures and the 2013 budget for the EMS Program areas:

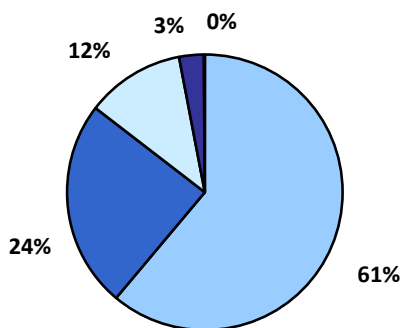
**2012 Program Area Actual Expenditures**



■ ALS
 ■ BLS  
■ Regional Services
 ■ Strategic Initiatives  
■ Auditor's Office

Sub-Area	2012 Actuals
ALS	\$41,484,555
BLS	\$15,396,394
Regional Services	\$6,010,426
Strategic Initiatives	\$1,016,513
Auditor's Office	\$80,245
<b>Total</b>	<b>\$63,988,133</b>

**2013 Program Area Budget**

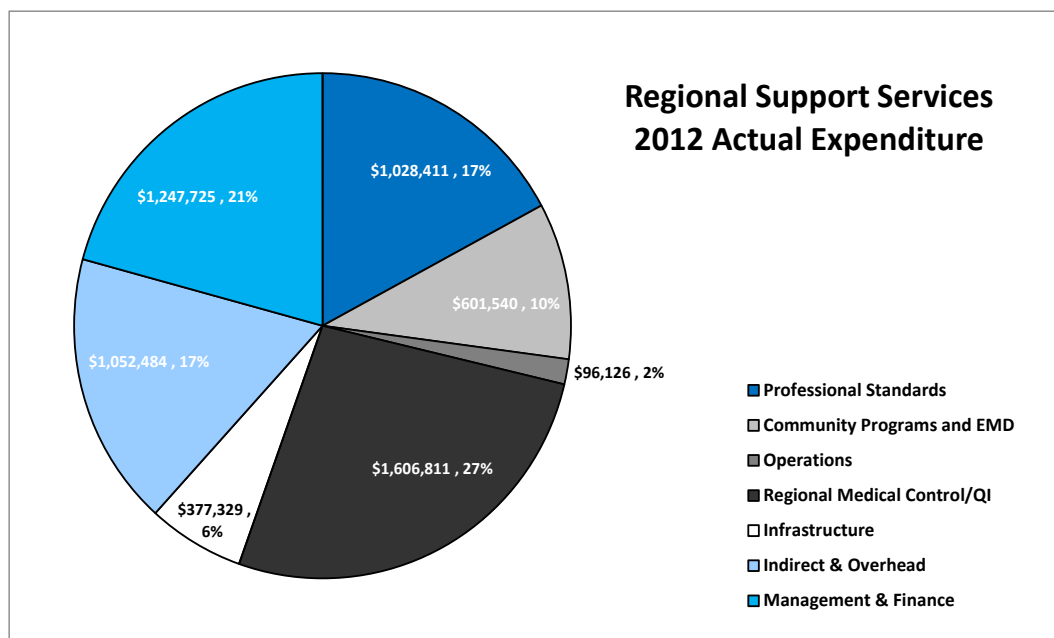


■ ALS
 ■ BLS  
■ Regional Services
 ■ Strategic Initiatives  
■ Auditor's Office

Sub-Area	2013 Budget
ALS	\$41,387,808
BLS	\$15,871,030
Regional Services	\$7,506,177
Strategic Initiatives	\$1,120,579
Auditor's Office	\$99,822
<b>Total</b>	<b>\$65,985,416</b>

The ALS percentage is higher in 2012 than in 2013 due to the \$3.4 million use of reserves in 2012 (detail on page 78).

Regional Services and Strategic Initiatives support the direct service activities and key elements of the Medic One/EMS system. The pie chart reflects 2012 expenditures for major Regional Services cost areas while the table shows Life to Date expenditures for Strategic Initiatives.



Entering the last year of the levy period, Strategic Initiative projects and budgets were reviewed for potential budget reductions and efficiencies. While most budgets were reduced, the scopes of two projects were expanded. A software upgrade of the CBD/CAD product was added to the CBD/CAD Integration project; and new on-line paramedic CME and on-line Law Enforcement personnel modules were added to the Interactive Enhancements to EMS Online.

EMS Strategic Initiatives - Life to Date Results (2008-2013)							
	2008 Actual	2009 Actual	2010 Actual	2011 Actual	2012 Actual	Life Time Budget	Balance
Emergency Medical Dispatch Strategic Initiatives							
CBD/CAD Integration <sup>1</sup>	\$258,448	\$0	\$0	\$0	\$0	\$485,601	\$227,153
Dispatch Center Performance Stds	\$406	\$260,186	\$265,299	\$284,761	\$269,884	\$1,363,200	\$282,664
Advanced EMD Training		\$7,008	\$24,569	\$38,858	\$35,336	\$154,035	\$48,264
Address Non-Emergency Calls	\$60,242	\$119,595	\$116,563	\$75,308	\$0	\$371,708	\$0
Injury Prevention Strategic Initiatives	\$161,890	\$168,242	\$153,773	\$139,922	\$123,728	\$949,175	\$201,620
Public Access Defibrillation	\$76	\$402	\$3,134	\$49,954	\$109,443	\$177,309	\$14,300
Interactive Enhancements to EMS Online <sup>2</sup>	\$8,150	\$57,740	\$127,070	\$12,015	\$96,053	\$533,646	\$232,618
Enhanced Network Design (SEND)	\$101,996	\$16,297	\$13,200	\$284,610	\$56,514	\$838,909	\$366,292
All Hazards Emergency Mgmt Preparation	\$0	\$0	\$0	\$0	\$0	\$0	\$0
EMS Efficiencies and Evaluations Studies			\$129,588	\$10,155	\$320,749	\$660,000	\$199,508
Levy Planning				\$1,441	\$4,806	\$18,247	\$12,000
<b>TOTAL</b>	<b>\$591,208</b>	<b>\$629,470</b>	<b>\$833,196</b>	<b>\$897,024</b>	<b>\$1,016,513</b>	<b>\$5,551,830</b>	<b>\$1,584,419</b>

<sup>1</sup> Upgrade of existing CBD/CAD software added in 2013

<sup>2</sup> Initiative expanded to include new Paramedic CME Modules and EMS for Law Enforcement

## EMS FUNDING AND 2013 FINANCIAL PLAN, continued

Based on refining EMS needs and project scopes, and pushed by the economic challenges of the 2008-2013 levy period, Strategic Initiative budgets continued to be refined, and where possible, reduced in this levy period (particularly to adjust to lowered revenues).

The reduction of overall Strategic Initiative lifetime budgets from 2012 to 2013 is \$221,560 and will help reduce the 2014-2019 Medic One/EMS levy rate. The following table shows the current lifetime budget compared to the previous year (2012) lifetime budget and the original budgets.

<b>EMS Strategic Initiatives Lifetime Budget Comparisons</b>			
	<b>New Lifetime Budget</b>	<b>Previous Lifetime Budget</b>	<b>Original Lifetime Budget</b>
Emergency Medical Dispatch Strategic Initiatives			
Address Non-emergency Calls	\$371,708	\$419,069	\$560,669
Dispatch Center Performance Standards	\$1,363,200	\$1,363,200	\$1,576,531
Advanced EMD Training	\$154,035	\$154,035	\$233,921
CBD/CAD Integration	\$485,601	\$385,501	\$127,053
Injury Prevention Strategic Initiative Programs	\$949,175	\$949,175	\$1,465,269
Public Access Defibrillation	\$177,309	\$177,309	\$162,980
Interactive Enhancements to CBT Online	\$533,646	\$484,975	\$1,042,928
Enhanced Network Design (SEND)	\$838,909	\$838,909	\$1,134,831
All Hazards Emergency Mgmt Preparation	\$0	\$0	\$205,522
EMS Efficiencies and Evaluations Studies	\$660,000	\$849,776	\$648,416
Levy Planning	\$18,247	\$151,441	\$382,664
<b>TOTAL 2008-2013</b>	<b>\$5,551,830</b>	<b>\$5,773,390</b>	<b>\$7,540,784</b>

The following table shows that through planning and refinement of initiatives during the 2008-2013 levy period, project managers were able to respond to the revenue crisis and reduce the Strategic Initiatives by \$2 million without negatively affecting projects important to the region.

### Strategic Initiative Budget Comparison

Original Strategic Initiatives Lifetime budget	\$7,540,784
Current (2013) SI Lifetime budget	\$5,551,830
Difference	(\$1,988,954)

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### **3. EMS Contingencies, Reserves and Required Fund Balance**

The 2008-2013 levy added contingencies related to ALS Wages and Disaster Relief, along with reserves to cover unanticipated inflation, vehicle costs/chassis obsolescence, risk abatement, and potential millage reduction (to potentially lower the rate for the next levy).

Based on comments from the King County Auditor related to fully funding ALS costs, EMS led a regional process to identify potential expenses that fell outside of the unit allocation. This information was used to revise existing reserves and develop new reserves that would be available to cover potential expenses not included in the ALS allocation. New reserves were added for Dispatch/Communications, Facilities, Excess backfill for paid time off (PTO), and Paramedic student training, and the salary contingency was converted to a salary reserve. In addition, amounts set aside within existing reserves were revised.

The region identified eligible use of reserves with use triggers, agency responsibilities (including cost sharing), how triggers were determined, how reserves were costed, and how reserves could be expensed. To access reserves, the proposed use must be reviewed and approved by both the Financial Subcommittee of the EMS Advisory Committee (EMSAC), and EMSAC itself. If approval levels are above funds appropriated by the King County Council, council approval would need to be secured before distributing funds to agencies. As part of the 2012 budget process, the King County Council approved these new reserves and access to the reserves.

**Provider/Program Balances:** Provider/Program balances are operating allocations that agencies and regional services choose to set-aside for future years' needs. All agencies contributed to their balances in 2012 anticipating future year expenditures.

**ALS Provider Loans:** Two agencies have taken out provider loans. The financial plan reflects efforts to repay loans by the end of the levy period. Both agencies repaid the 2012 portion of their loans.

**Designations from 2002-2007 Levy:** Earlier in the levy period, these funds were used for two tenant improvements related to medic quarters and to cover the difference between actual dispatch costs and the amount included in the allocation (prior to the establishing dispatch reserves). The remainder of these funds are set aside for the Medic 7 relocation that is currently under review.

## EMS FUNDING AND 2013 FINANCIAL PLAN, continued

**Reserves:** Two reserves were used in 2012 as shown in the Use of Reserves and Designations table below. These include use of reserves to cover dispatch costs where actual costs exceeded amounts in the allocation, and use of the ALS Retirement Liabilities Reserve to cover the first year of the Department of Retirement Services invoices related to converting King County Medic One paramedics from the PERS to the LEOFF retirement system.

The following table shows actual and proposed use of reserves and designations from both the current and the 2002-2007 levy periods, as of July 2012:

USE OF RESERVES AND DESIGNATIONS						
Reserves	2009	2010	2011	2012	2013 Est.	Total
Diesel Reserve	\$171,903					\$171,903
Vehicle/Chassis Reserve	\$201,751		\$389,381			\$591,132
Salary/COLA Reserve			\$336,542			\$336,542
Dispatch Reserve			\$229,463	\$234,072	\$239,426	\$702,961
Facility Reserve					\$250,000	\$250,000
Call Volume Reserve					\$192,312	\$192,312
Paramedic Student Reserve					\$120,000	\$120,000
ALS Retirement Liabilities				\$3,203,225	\$105,229	\$3,308,454
<b>SubTotal</b>	<b>\$373,654</b>	<b>\$0</b>	<b>\$955,386</b>	<b>\$3,437,297</b>	<b>\$906,967</b>	<b>\$5,673,304</b>
<b>Designations from 2002-2007 Levy</b>						
Facility Tenant Improvements	\$150,000	\$190,914				\$340,914
Dispatch		\$258,018				\$258,018
<b>SubTotal</b>	<b>\$150,000</b>	<b>\$448,932</b>	<b>\$0</b>			<b>\$598,932</b>
<b>TOTAL</b>	<b>\$523,654</b>	<b>\$448,932</b>	<b>\$955,386</b>	<b>\$3,437,297</b>	<b>\$906,967</b>	<b>\$6,272,236</b>

**Fund Balances:** EMS Financial Policies require a fund balance of 6% of revenues. The current fund balance is above the minimum requirement. The amount above required fund balance is earmarked to lower the 2014-2019 Medic One/EMS levy rate.

The following chart shows contingencies, designations and reserves:

<b>CONTINGENCIES, RESERVES &amp; DESIGNATIONS (available amounts)</b>	<b>2012 Actuals</b>	<b>2013 Projected</b>
<b>EMS Contingencies</b>		
Use of Designations	\$0	\$460,290
Use of Reserves	\$0	\$485,000
Disaster Response Contingency	\$0	\$0
<b>SUBTOTAL EMS CONTINGENCIES</b>	<b>\$0</b>	<b>\$945,290</b>
<b>Reserves &amp; Designations</b>		
Reappropriation	\$0	\$0
Journal Entry Errors	\$3,391	\$3,391
<b>Designations</b>		
Provider/Program Balances	\$8,629,504	\$5,369,215
ALS Provider Loans	(\$234,793)	(\$0)
KCM1 Equipment Replacement	\$2,678,020	\$1,238,020
Designations from 2002-2007 Levy	\$230,842	\$0
2008-2013 SI Carryover Projects		\$296,913
<b>Reserves for Unanticipated Inflation</b>		
Diesel Cost Stabilization	\$90,000	\$90,000
Pharmaceuticals/Medical Equipment	\$877,600	\$447,576
Call Volume/Utilization Reserve	\$977,155	\$510,066
<b>Reserves</b>		
Salary Reserve	\$490,000	\$320,000
Excess Backfill for PTO	\$400,000	\$400,000
Paramedic Student Training	\$310,000	\$310,000
Dispatch/Communications	\$420,791	\$181,365
Medic Unit/Chassis Obsolescence	\$550,619	\$550,619
Facilities	\$1,050,000	\$800,000
Risk Abatement	\$2,200,000	\$2,200,000
Outstanding ALS Retirement Liability	\$696,775	\$591,546
Millage Reduction	\$6,741,654	\$6,941,654
<b>SUBTOTAL RESERVES &amp; DESIGNATIONS</b>	<b>\$26,111,558</b>	<b>\$20,250,365</b>
<b>TOTAL</b>	<b>\$26,111,558</b>	<b>\$21,195,655</b>

\* 2013 Forecast amount includes \$2.8 million contribution from RS/SI to 2014-2019 levy buydown.

As part of the 2014-2019 Medic One/EMS levy planning process, Regional Services/Strategic Initiatives pledged \$2.8 million of accumulated program balances and budget reductions toward reducing the 2014-2019 levy rate. The \$5.4 million projection in Provider/Program Balances (under “Designations” above) includes that reduction, allowing the funds to flow into fund balance to cover expenditures for the next levy period.

## EMS FUNDING AND 2013 FINANCIAL PLAN, continued

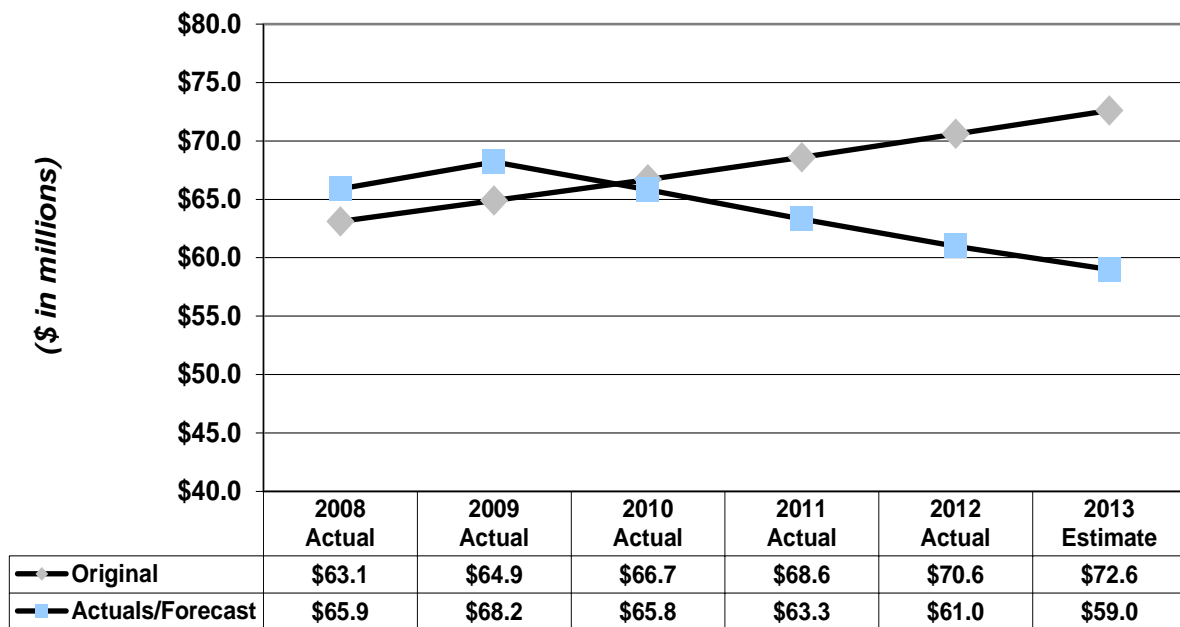
### 4. 2008-2013 Financial Plan Trends

Reductions in assessed valuations, along with the 30 cent per \$1,000/AV cap on the EMS levy, have resulted in lowered property tax assessment forecasts. The economic downturn has also resulted in lowered inflation. Since EMS allocation increases are based on economic metrics, allocation amounts have also been lower than originally planned. In addition, efficiencies and management decisions have also lowered expenditure levels. These include:

- Removing the planned addition of two 12-hour ALS units in 2012 and 2013;
- ALS agencies managing small unexpected costs within unit allocations; and
- Lowering overall Strategic Initiative lifetime project budgets.

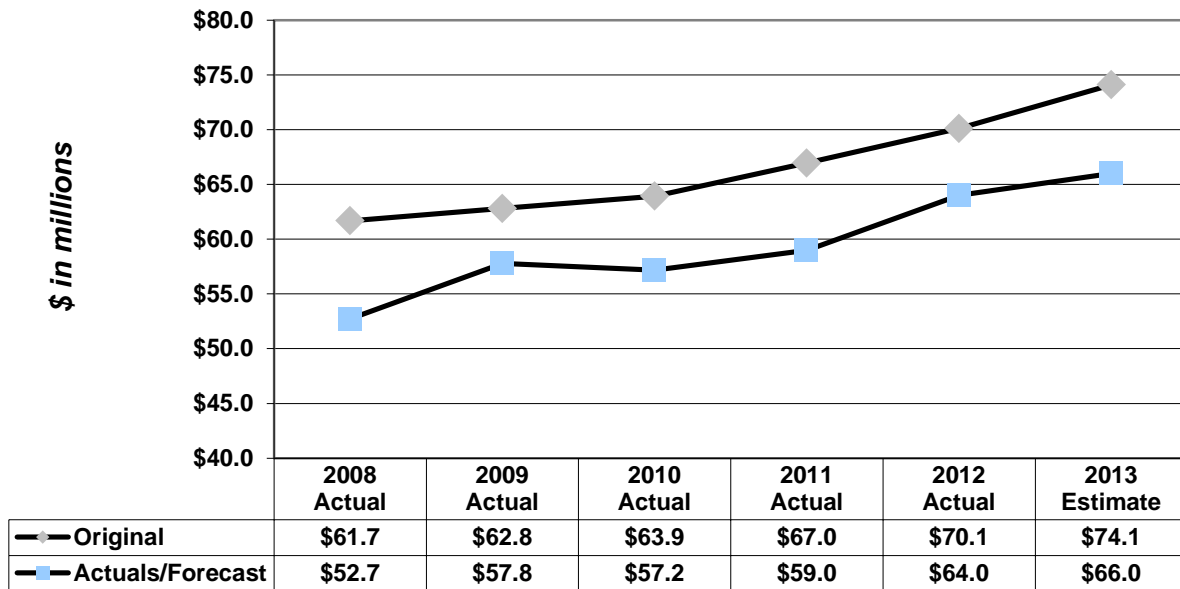
The following charts compare the planned revenues and expenditures (from the EMS Levy Ordinance 15861) with the current forecast:

**Original and Current Revenue Forecasts**



Total revenue forecast in the original plan was \$406.5 million; current revenue forecast is \$383.2 million or \$23.31 million less than planned.

## Original and Current Expenditure Forecasts



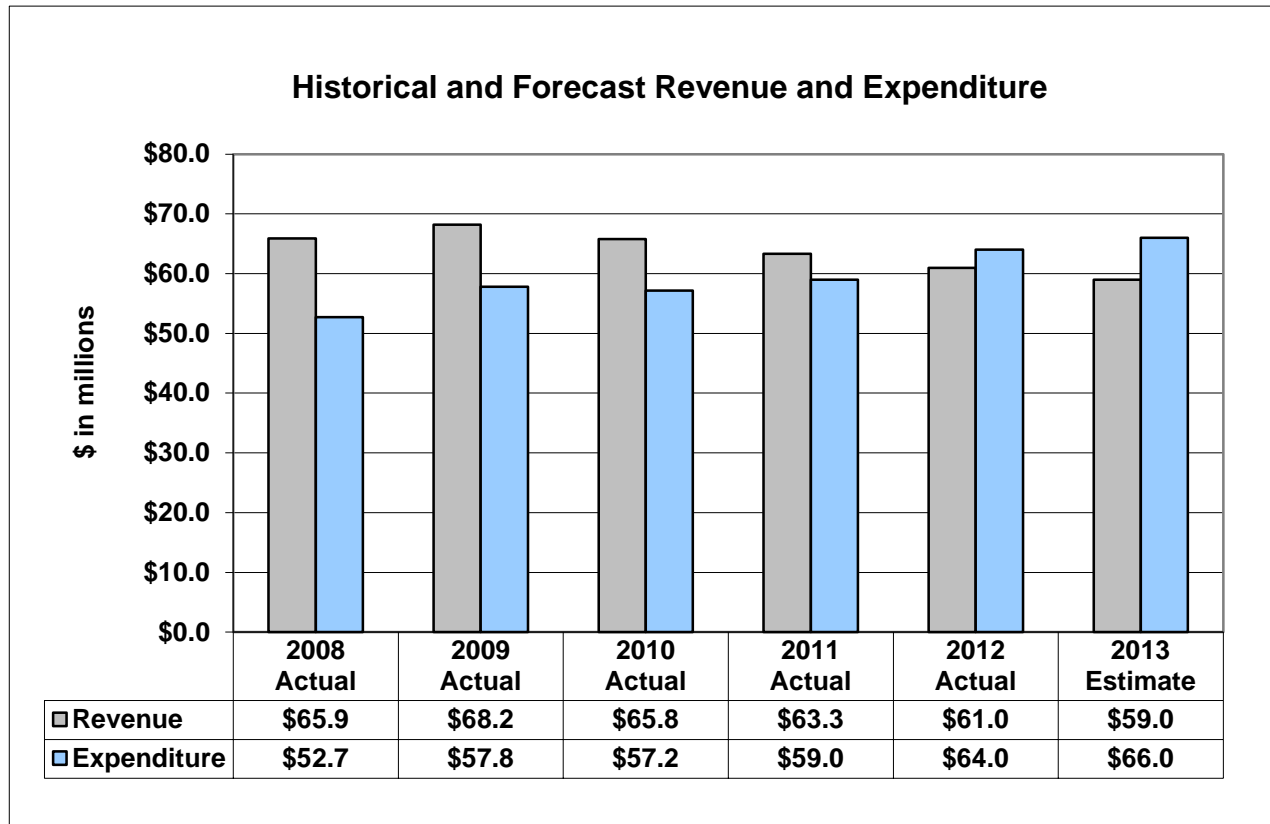
Total expenditure forecast in the original plan was \$399.6 million; current expenditure forecast (not including potential use of disaster relief contingency) is \$356.7 million, or \$42.9 million less than planned. Current forecast has reduced expenditures by \$20 million more than revenues.

The following table shows the difference between the original and current financial plan assumptions:

Comparison of Original and Current Financial Plans (in millions) *							
	2008	2009	2010	2011	2012	2013	Total
Difference (Current minus Original)							
Revenue	\$2.80	\$3.30	(\$0.90)	(\$5.30)	(\$9.61)	(\$13.60)	(\$23.31)
Expenditures	(\$8.95)	(\$5.04)	(\$6.78)	(\$7.96)	(\$6.11)	(\$8.10)	(\$42.93)
*Financial Plan in Ordinance 15861							

## EMS FUNDING AND 2013 FINANCIAL PLAN, continued

The chart below shows actual and forecast revenues and expenditures (not including funds budgeted for disaster relief contingency) for the 2008-2013 levy period.



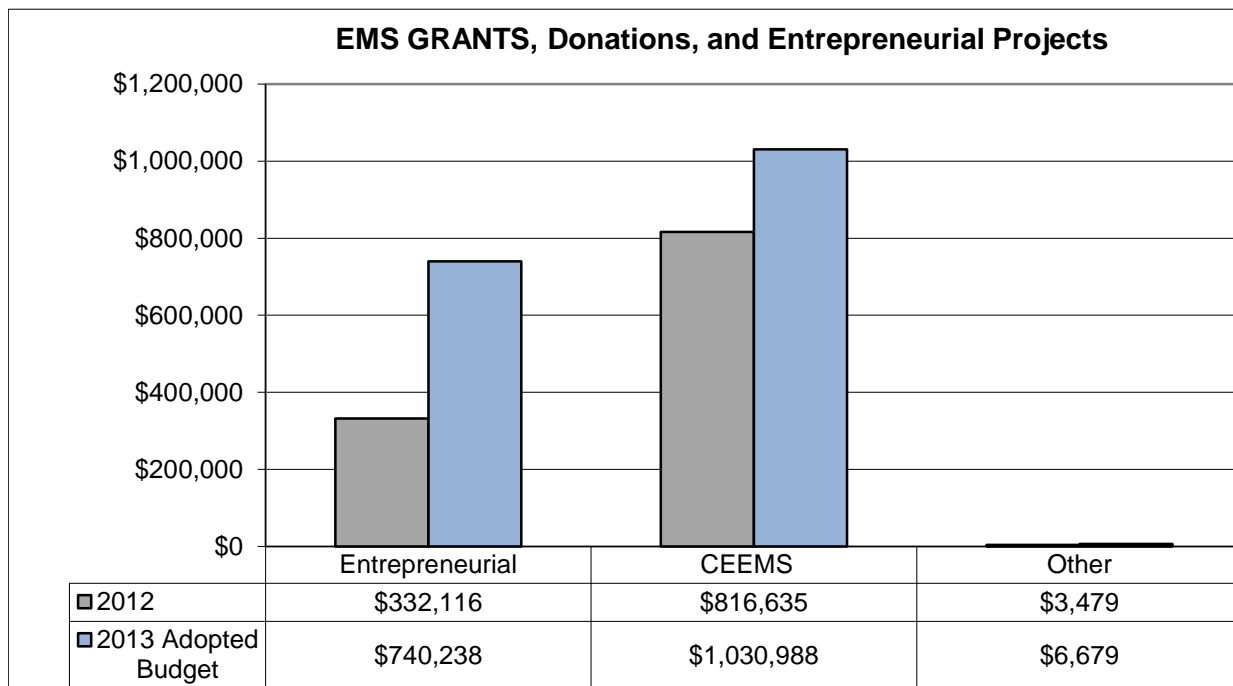
The EMS Division remains committed to minimizing new costs and looking for programmatic efficiencies during the 2008-2013 levy period. The regional partners reiterated their commitment to continue to look at placing funds into the millage reserve, while at the same time meeting the needs of the system. This resulted in having funds available to lower the amount of the needed 2014-2019 levy rate to 33.5 cents.

### 5. EMS Grants, Donation, and Entrepreneurial Projects (Public Health Fund)

The EMS Division, through the EMS Grants Group and the Center for Evaluation of Emergency Medical Services (CEEMS) located in the Public Health Fund, has been very successful in competing for research grants. The two major grants for 2012 included a five-year \$1.3 million grant from the Medtronic Foundation awarded in 2011 to implement the HeartRescue Flagship Program. It aims to improve outcomes from sudden cardiac arrest throughout Washington state by focusing on community, pre-hospital, and hospital response levels of care. The other came from the Life Sciences Discovery Fund Agency, which in 2009 awarded a \$2.6 million four-year grant to support the Program to Integrate Technology and Cardiac Arrest Resuscitation (PITCAR). PITCAR includes a collection of projects aimed at developing and advancing new technologies to improve the treatment of out-of-hospital cardiac arrest.

The EMS Grants Group focuses on research grants that usually do not obligate the EMS program to fund future services. The results of these research grants have been incorporated into existing EMS services and have affected interventions, protocols and standard operating procedures used in the field. The EMS Division is evaluating ongoing continuation of activities initiated through EMS Grant Group and CEEMS as part of the planning process for the next levy period.

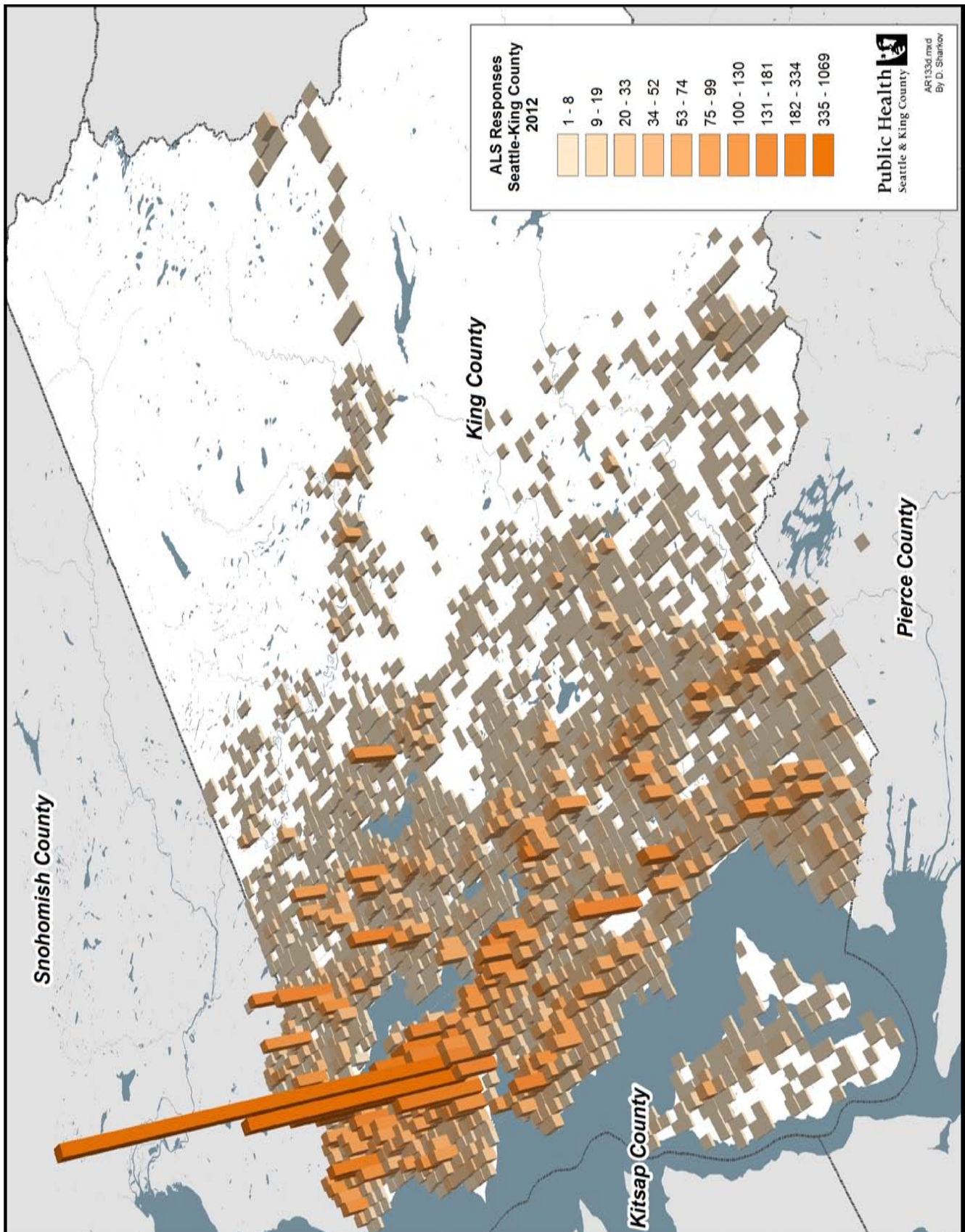
The EMS Online Entrepreneurial Project provides online training to agencies outside King County as a subscription service. The project was based on the interest of the outside agencies, a response to the King County Executive's Entrepreneurial Project initiative, and included legal review and approval. The expenses incurred in providing the service outside of King County are covered by revenue from the subscription program. In addition, subscription revenues are used to make enhancements above those funded by the EMS levy.



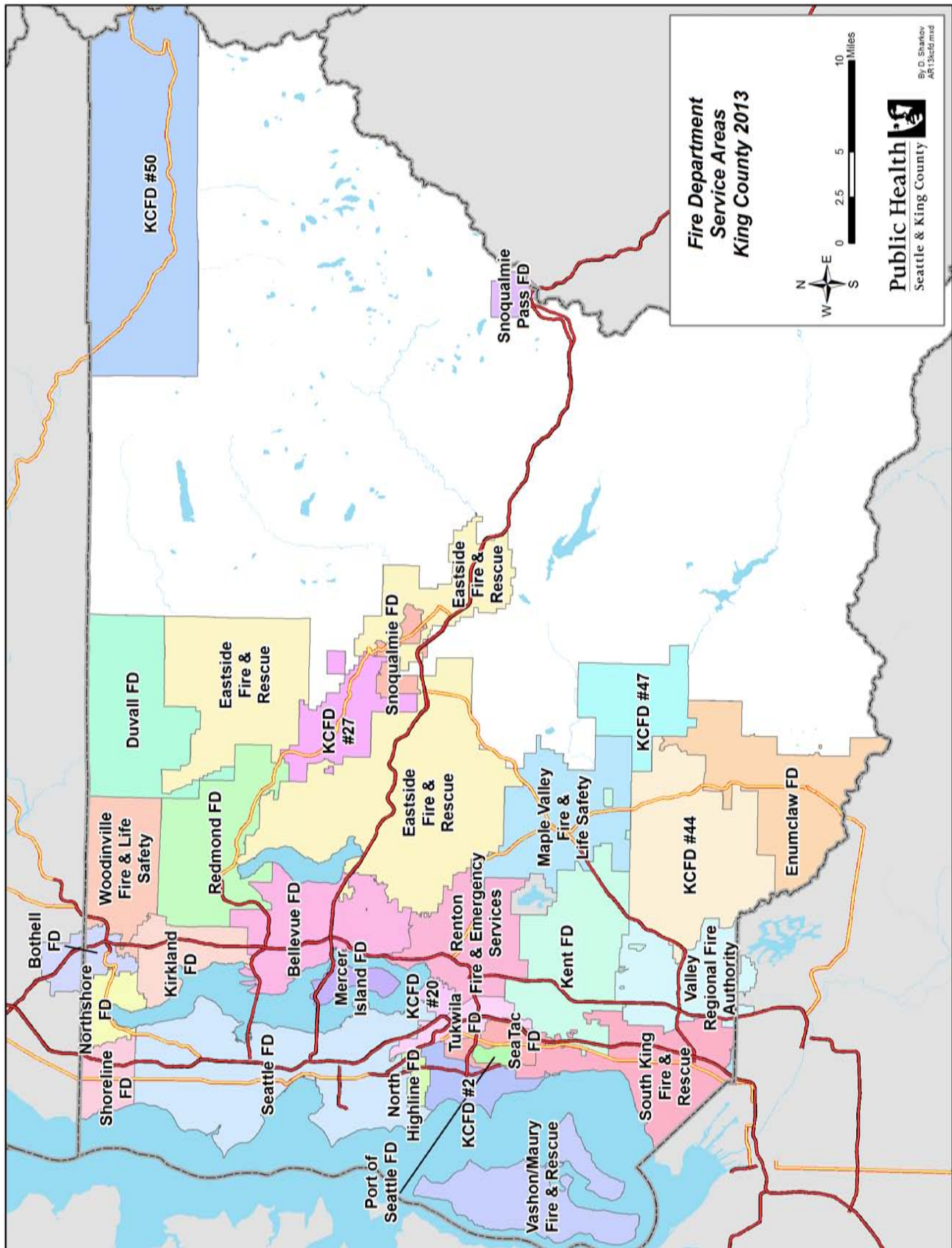
## 6. Conclusions

While the EMS Levy Fund faced significant challenges during the 2008-2013 levy period (primarily related to reduced revenues from reduced property tax assessments), through aggressive management the region not only reduced expenditures without significantly affecting programs but also was able to save funds that will be used to reduce the rate for the 2014-2019 Medic One/EMS Levy. This is a significant accomplishment and was only achieved through regional cooperation and hard work by EMS Chiefs, project managers, and other staff. The economic challenges of this levy period showed the ability of the region to work together in successfully managing the EMS system.

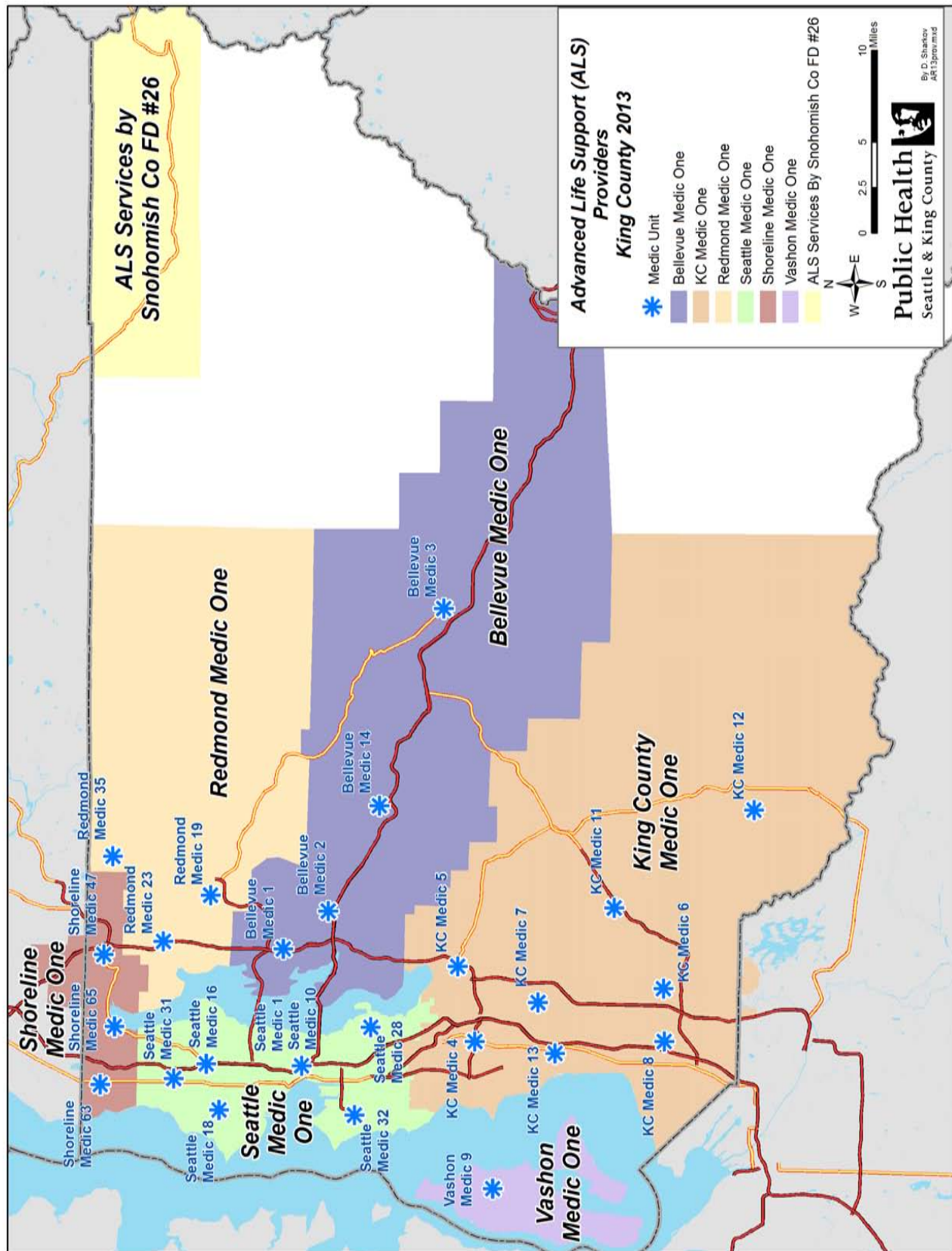
## Appendix A: Regional Map of 2012 Total ALS Call Volume



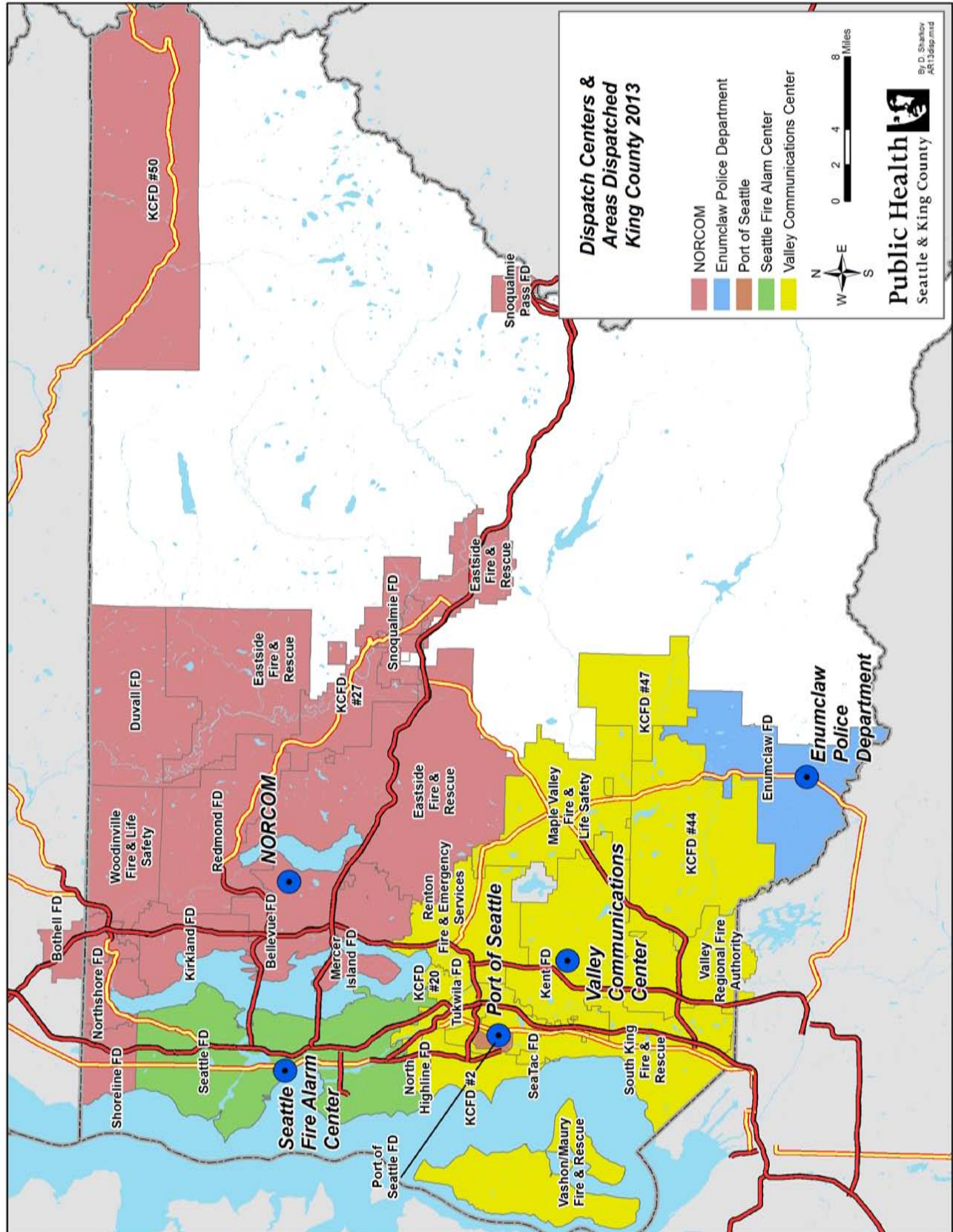
## Appendix B: Regional Map of BLS Provider Areas



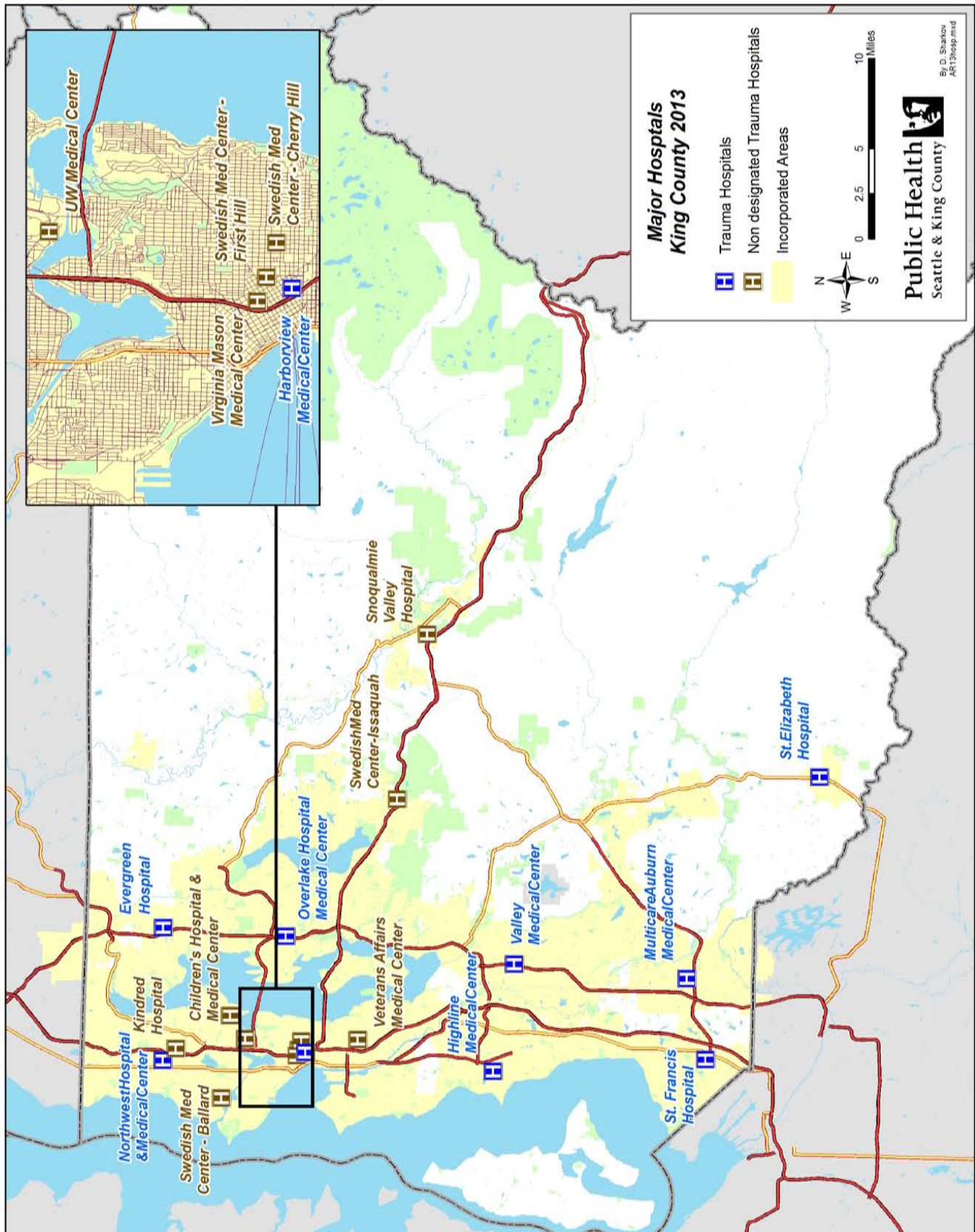
## Appendix C: Regional Map of ALS Provider Areas



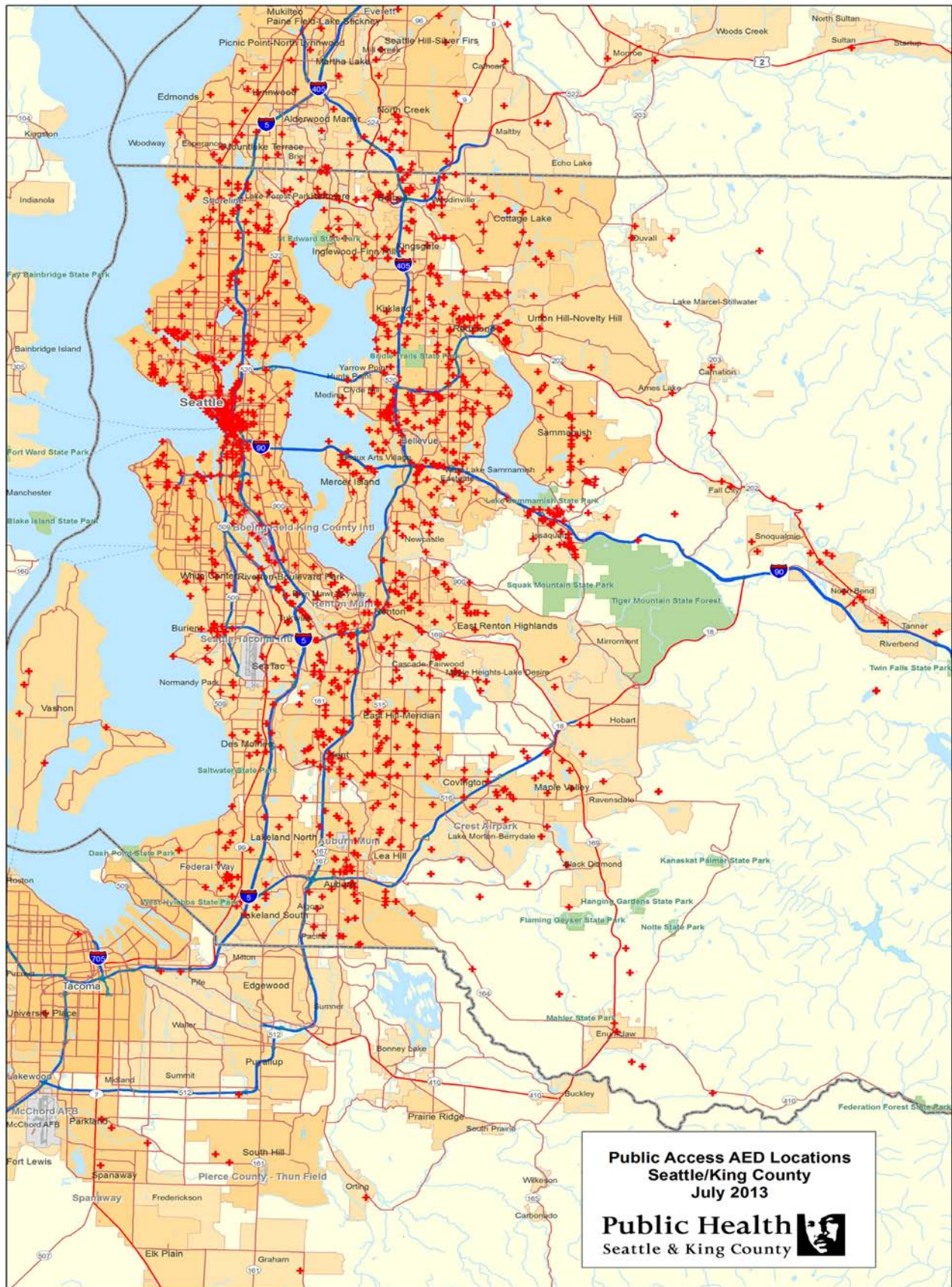
# Appendix D: Regional Map of Dispatch Center Service Areas



## Appendix E: Regional Map of EMS Hospitals



## Appendix F: Public Access AEDs - King County



## Appendix G: 2013 EMS Advisory Committee Listing

<b>Name</b>	<b>Representation</b>	<b>Title/ Organization</b>
Jim Fogarty, Chair	KC Emergency Medical Services	Director, EMS Division
Gill Glass	Ambulance Service	AMR, Operations Manager
Matt Cowan	ALS Providers - Shoreline	Chief, Shoreline Fire Department
Al Church	BLS in Cities > 50,000	Chief, South King Fire & Rescue
Michael Copass, M.D.	Seattle Medical Program Director	Medical Program Director, Seattle Medic One
Wayne Corey	Citizen Representative	
Gregory Dean	ALS Providers - Seattle	Chief, Seattle Fire Department
Ron Gibson	ALS Providers - Redmond	Interim Chief, Redmond Fire Department
Mickey Eisenberg, M.D.	EMS Medical Program Director	Medical Program Director, KCEMS
Mike Eisner	ALS Providers - Bellevue	Chief, Bellevue Fire Department
David Fleming, M.D.	Public Health - Seattle & King Co.	Director & Health Officer
John Herbert	ALS Providers - KC Medic One	Medical Services Administrator, King County Medic One
Jon Kennison	KC Fire Commissioner's Assn. - Rural	Fire Commissioner, Shoreline
Hank Lipe	ALS Providers - Vashon Medic One	Chief, Vashon Island Fire & Rescue
Doug McDonald	Labor - BLS	EMS, Renton Fire Department
Steve Perry	Labor - ALS	Paramedic, KC Medic One
Mark Peterson	BLS in Cities > 50,000	Chief, Renton Fire Department
Alan Reed	Health Care System	Manager, Medical Support Services, Group Health
Lora Ueland	Dispatch	Valley Communications Center, Director
John Rickert	KC Fire Commissioner's Assn. - Urban	Fire Commissioner, South King Fire & Rescue
Jim Schneider	BLS in Cities >50,000	Chief, Kent Fire & Life Safety
Adrian Whorton, M.D.	Chair, Medical Directors' Committee	Medical Director, Redmond Medic One

# Appendix H: Community Medical Technician (CMT) Phase II Summary Report

Response Time: (Performance Measurement #1 - Maximum response time in 20 minutes or less)

The response time parameter of the CMT units was established at 20 minutes maximum by the EMS Medical Director. The NORCOM CAD was programmed to not recommend CMT Response Mode for an estimated time of arrival (ETA) greater than 20 minutes. The median response time for CMT units from Eastside Fire & Rescue (EF&R) was 14.1 minutes.

Note: Due to a difference in the model adopted by Woodinville Fire & Rescue (WF&R), results in Tables 1 and 2 are presented only for the EF&R CMT unit.

Table 1. Median unit response times for Eastside Fire & Rescue

	Median Unit Response Time
<b>CMT Unit</b>	14.1 minutes
<b>BLS Unit Yellow and T IDC Codes*</b>	5.9 minutes
* Low-acuity dispatch codes	

The difference between CMT and BLS median response time for low-acuity calls is 8.2 minutes. Unit response time data for BLS unit Yellow and T IDC Codes and all BLS unit responses were obtained for one year prior to the CMT Pilot II Project (February 2011 to February 2012). Additionally, data for BLS unit Yellow and T IDC codes were obtained during the same in-service hours as the CMT Pilot II Project at EF&R (1100 to 2300 hours).

Average Unit On-Scene Duration (Performance Measurement #2 - Average unit on-scene time is  $\geq 5$  minutes longer than average BLS on-scene time for CMT control cases [cases that meet CMT criteria])

Table 2. Median unit on-scene duration for Eastside Fire & Rescue

	Median Unit On-Scene Duration (Arrival Time to Return to Service Time)
<b>CMT Cases</b>	24.7 minutes
<b>CMT Control Cases</b>	17.2 minutes
<b>All BLS Unit Responses</b>	21.0 minutes
<b>BLS Unit Yellow and T IDC Codes*</b>	16.5 minutes
* Low-acuity dispatch codes	

Decreased Calls to 9-1-1 from Recurring Patients (Performance Measurement #3 - Decrease by 50% the average monthly number of calls from an identified set of recurring patients, 6 months before through 6 months after pilot period)

Six-month post-CMT Pilot II data are not available at the time of this annual report, but will be available in the final evaluation report of the CMT Pilot II Project.

Referral Process (Performance Measurement #4 - An average of 10 patients added monthly by each fire agency to a patient referral database for follow-up care or assistance)

Overall, there was a referral made or attempted in 18.6% of CMT responses where the patient was seen by the CMT (54 referral attempts out of 291 cases). Patients were most frequently referred to the EMS Division's One Step Ahead fall prevention program. Of those referred, 35.2% were repeat callers to 9-1-1 (more than one CMT response). In all, 35 patients received a total of 72 referrals to one or more community agency from the CMTs. Fourteen patients received two or more different referrals from the CMTs. Nine patients declined the attempted referral.

Table 3. Community service referrals by agency during Pilot II

<b>CMT Referrals to Community Agencies</b>	<b>One Step Ahead</b>	<b>Gateway Sr. Information &amp; Assistance</b>	<b>Evergreen Information &amp; Assistance*</b>	<b>Other Referral</b>	<b>Total Referrals</b>	<b>Average Referrals per Month</b>
<b>Eastside Fire &amp; Rescue</b>	27	19	6	7	59	4.9
<b>Woodinville Fire &amp; Rescue</b>	5	2	5	1	13	1.1
<b>Total Referrals</b>	32	21	11	8	72	6.0
* Includes two referrals to the Evergreen Nurse Line						

Several challenges during the pilot contributed to lower than expected patient referrals, including a large number of CMT-eligible calls not reconfigured by NORCOM (thus, no CMT unit was dispatched), and a miscommunication during training between EMS and CMTs on the referral process.

Referral Contact (Performance Measurement #5 - 75% of patients referred by fire agencies receive follow-up contact from a referral agency)

Of the 35 patients who were referred to community resources by the CMTs, referral follow-up information was available for 32 patients (91.4%). Referral agencies reported being able to make follow-up contact with 22 of the 32 patients (68.8%).

Referral Participation (Performance Measurement #6 - 75% of referred patients' follow-up and take part in referral)

As noted in the previous section, 22 patients were contacted by referral agencies. Of the 22 patients contacted, 11 (50%) participated in referral follow-up activities. Patients declined participation for reasons such as moving out of the area or with family, current hospitalization, other services in place, and reporting no need for services at the time.

Patient Satisfaction (Performance Measurement #7 - 95% of patients satisfied or very satisfied with treatment by CMT)

Patient interviews were conducted via telephone. Questions were asked regarding the detail and quality of response from the local fire department, the referral process, if appropriate, and demographics. Of the total 521 CMT responses, 148 patients (28.4%) were eligible for the interview; 373 (71.6%) were excluded because the CMT did not arrive or treat the patient, the patient had been seen previously during the study period (patients were only interviewed once), patient age <18 years, patient in custody at the time of the CMT response, patient had a psychological problem or dementia, or patient had a terminal illness.

Among the 148 eligible patients, 98 (66.2%) completed all interview questions. Partial interviews were obtained from four; two refused to continue after starting the interview, and two were responding for the patient and did not know the answers to all of the questions. The other 46 eligible patients were not interviewed. The primary reason was inability to contact the patient (N=39), with other reasons including refusal at the outset (N=5), inability to remember the CMT visit (N=1), and disability (N=1). Control cases were interviewed to provide a comparison group, with the target number of 50. As seen in Table 4, below, 97.9% of patients in the CMT group were satisfied or very satisfied with the care and information in the CMT case group and 90.4% were satisfied or very satisfied in the control group.

Table 4. Patient satisfaction with CMT/EMT Care and Information, CMT Cases versus Control Cases

<b>How satisfied were you with the EMT Care and Information?</b>	<b>CMT Cases</b>	<b>Control Cases</b>
<b>Very Satisfied</b>	74 (75.5%)	34 (65.4%)
<b>Satisfied</b>	22 (22.4%)	13 (25.0%)
<b>Neutral</b>	0 (0%)	2 (3.8%)
<b>Dissatisfied</b>	1 (1.0%)	3 (5.8%)
<b>Very Dissatisfied</b>	1 (1.0%)	0 (0%)
<b>Total</b>	98	52

CMT Interviews CMT interviews were conducted via telephone. Questions were asked regarding their experience as a CMT, training, staffing, safety, dispatch process, referral process, and overall impression of the project. Below, in Table 5, are the initial thoughts and impressions of fire department EMTs before implementation of the CMT unit compared to their thoughts and impressions after completion of the project.

Table 5. CMT thoughts and impressions before and after CMT Pilot II Project, for Eastside Fire & Rescue and Woodinville Fire & Rescue

	<b>Before CMT unit was put in service, what would you say your initial thoughts and impressions were?</b>			<b>Now that the CMT Project is complete, what are your thoughts and impressions?</b>		
	<b>EF&amp;R</b>	<b>WF&amp;R</b>	<b>Combined</b>	<b>EF&amp;R</b>	<b>WF&amp;R</b>	<b>Combined</b>
	N=47	N=18	N=65	N=45	N=18	N=63
<b>Very Positive</b>	12.8%	5.6%	10.9%	37.8%	5.6%	28.6%
<b>Somewhat Positive</b>	25.5%	16.7%	23.4%	46.7%	5.6%	34.9%
<b>Neutral</b>	42.6%	55.6%	46.9%	6.7%	27.8%	12.7%
<b>Somewhat Negative</b>	17.0%	11.1%	15.6%	8.9%	38.9%	17.5%
<b>Very Negative</b>	2.1%	11.1%	3.1%	0.0%	22.2%	6.3%

The two departments in the CMT Pilot II Project did not implement the CMT model in the same way. The differences in impressions between the departments may be due to these implementation differences. While participants at EF&R overwhelmingly moved towards support of the program, participants at Woodinville Fire & Rescue did not. However, several WF&R participants mentioned specifically that they supported the general CMT concept but had difficulty realizing the benefits due to the program structure at WF&R.

# Appendix I: EMS FUND 1190 Revenue/Expenditures Summary

	2011 Actual	2012 Actual	2013 Budget**
<b>BEGINNING FUND BALANCE</b>	<b>38,627,394</b>	<b>42,906,269</b>	<b>31,568,566</b>
<b>REVENUES</b>			
Property Taxes	62,464,631	60,022,516	57,642,960
Grants	1,738	28,800	1,850
Charges for Services	170,361	188,858	190,000
Interest Earnings/Miscellaneous Revenue	572,461	717,125	269,200
Other Financing Sources	52,442	28,737	54,000
Transfer From Current Expense Subfund		0	
<b>EMS REVENUE TOTAL</b>	<b>63,261,633</b>	<b>60,986,116</b>	<b>58,157,810</b>
<b>EXPENDITURES</b>			
Advanced Life Support Services [12]	(36,753,633)	(41,484,555)	(41,387,808)
Basic Life Support Services	(15,154,163)	(15,396,394)	(15,871,030)
Regional Services	(6,070,339)	(6,010,428)	(7,506,177)
Strategic Initiatives	(897,024)	(1,016,513)	(1,120,579)
Use of Designations			(989,711)
Disaster Response Contingency			(3,750,000)
Use of Reserves			(1,860,000)
King County Auditor's Office	(90,512)	(80,245)	(99,822)
<b>EMS EXPENDITURE TOTAL</b>	<b>(58,965,671)</b>	<b>(563,988,133)</b>	<b>(572,585,127)</b>
GAAP Adjustment	(\$13,696)		
Unrealized Gain/Losses		\$51,109	
Assume Disaster Relief not Used			\$3,540,000
Journal Entry Error	(\$3,391)		
Subtotal	(17,087)	51,109	3,540,000
<b>ENDING FUND BALANCE</b>	<b>\$42,906,269</b>	<b>\$39,955,361</b>	<b>\$22,681,249</b>
<b>RESERVES AND DESIGNATIONS</b>			
Encumbrances			
Reappropriation			
Designations (incl. program balances)	(\$7,547,458)	(\$8,629,504)	(\$2,771,000)
ALS Providers Loans	\$469,586	\$234,793	
KCMU Equipment Replacement	(\$2,512,444)	(\$2,678,020)	(\$2,512,444)
Designations from 2002-2007 Levy	(\$230,842)	(\$230,842)	
Journal Entry Error		(\$3,391)	
Reserves for Unanticipated Inflation	(\$2,129,821)	(\$1,944,755)	(\$1,047,642)
Reserves (incl. millage reduction)	(\$15,492,136)	(\$12,859,839)	(\$11,434,125)
<b>TOTAL RESERVES AND DESIGNATIONS</b>	<b>(\$27,403,115)</b>	<b>(\$26,111,558)</b>	<b>(\$17,765,211)</b>
<b>ENDING UNDESIGNATED FUND BALANCE</b>	<b>\$15,463,154</b>	<b>\$13,843,803</b>	<b>\$4,916,038</b>
<b>TARGET FUND BALANCE</b>	<b>\$3,795,688</b>	<b>\$3,659,167</b>	<b>\$3,489,469</b>

\*Double budgeteering of direct distributed amounts not included.

## King County Medic One Donations

Fund 6500/Account 05204***	2011	2012
Beginning Balance	\$6,931	\$9,165
Donations	\$2,234	\$26,551
Expenditures		\$0
Ending Balance	\$9,165	\$35,716

\*\* Sources: ADMS downloads

# Appendix J: EMS Division 2008-2013 Bibliography

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Professional Standards Programs <a href="http://www.kingcounty.gov/healthservices/health/ems/training.aspx">www.kingcounty.gov/healthservices/health/ems/training.aspx</a>	(206) 263-8054
CPR/AED Training Programs <a href="http://www.kingcounty.gov/healthservices/health/ems/aed.aspx">www.kingcounty.gov/healthservices/health/ems/aed.aspx</a>	(206) 263-8562
Emergency Medical Dispatch Programs <a href="http://www.kingcounty.gov/healthservices/health/ems/emdprogram.aspx">www.kingcounty.gov/healthservices/health/ems/emdprogram.aspx</a>	(206) 263-8636
Injury Prevention and Public Education Programs <a href="http://www.kingcounty.gov/healthservices/health/ems/community.aspx">www.kingcounty.gov/healthservices/health/ems/community.aspx</a>	(206) 263-8544
Regional Medical Control and Quality Improvement <a href="http://www.kingcounty.gov/healthservices/health/ems/quality.aspx">www.kingcounty.gov/healthservices/health/ems/quality.aspx</a>	(206) 263-8659
Center for the Evaluation of EMS (CEEMS) <a href="http://www.kingcounty.gov/healthservices/health/ems/CEEMS.aspx">www.kingcounty.gov/healthservices/health/ems/CEEMS.aspx</a>	(206) 263-8564

